DOCUMENT RESUME

ED 162 469 EC 112 512

AUTHOR	Semmel, Melvyn I.; And Others
TITLE	The Improvement of Social Status Among Rejected Pupils Through the Modification of Teacher Behavior Using the Computer-Assisted Teacher Training System (CATTS): An Inservice Training Application of CATTS. Final Report 53.6.
INSTITUTION	Indiana Univ., Bloomington. Center for Innovation in Teaching the Handicapped.
SPONS AGENCY	Bureau of Education for the Handicapped (DHEW/OE), Washington, D.C.
PUB DATE	Aug 76
GRANT	OEG-9-242178-4149-032
NOTE	147p.; A part of the Computer-Assisted Teacher Training System (CATTS) Development and Applications series; For related information, see EC 112 508 - 511
AVAILABLE FROM	Indiana University, Center for Innovation in Teaching the Handicapped, School of Education, Bloomington, Indiana 47401 ($2.00)
EDRS PRICE	MF-$0.83 HC-$7.35 Plus Postage.
DESCRIPTORS	*Computer Assisted Instruction; Elementary Education; Exceptional Child Research; Feedback; *Handicapped Children; *Inservice Teacher Education; Interaction Process Analysis; *Peer Acceptance; Positive Reinforcement; *Student Teacher Relationship
IDENTIFIERS	*Computer Assisted Teacher Training System

ABSTRACT

A study involving 16 elementary school teachers and 32 low social status children was conducted to improve the social status of target classrooms through the implementation of an "in situ" Computer Assisted Teacher Training System (CATTS) intervention. During the treatment phase, teachers in Group 1 (n=8) received 12 CATTS post-session feedback opportunities in the format of hardcopy computer printouts, which were profiles of the teacher interactions with low-status children. Teachers in Group 2 (n=8) received only seven sessions with CATTS post-session hardcopy computer printout feedback. At the end of the study, posttest sociometric measures were administered to all children. Data revealed that teachers in both groups increased their frequency of giving positive reinforcement and asking questions in the classroom as a result of the CATTS data phone intervention. Results also showed that the low-status pupils increased in their classroom interactions from baseline to treatment phases. (Appended materials include instructions for sociometric testing, information on reading the computer feedback printout, and the Indiana Interaction Index categories and definitions.) (Author/SBH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED162469

1

THE COMPUTER-ASSISTED TEACHER TRAINING SYSTEM (CATTS) DEVELOPMENT AND APPLICATIONS

THE IMPROVEMENT OF SOCIAL STATUS AMONG REJECTED PUPILS THROUGH THE MODIFICATION OF TEACHER BEHAVIOR USING THE COMPUTER-ASSISTED TEACHER TRAINING SYSTEM (CATTS): AN INSERVICE TRAINING APPLICATION OF CATTS[1]

August, 1976

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Melvyn I. Semmel
Project Director

with

Erminia V. Ballard and Chidambaram Sivasailam
Project Research Associates

Jerry Olson
Systems Coordinator

The Computer-Assisted Teacher Training System:
Development and Application

Volume II, Number 2

Center for Innovation in Teaching the Handicapped

Indiana University

EC112512

---

[1] This research was supported by grant #OEG 9-242178-4149-032 from the U.S. Office of Education, Bureau of Education for the Handicapped, to the Center for Innovation in Teaching the Handicapped. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

ABSTRACT

The primary purpose of this study was to improve the social status in target classrooms through the implementation of an in situ Computer-Assisted Teacher Training System (CATTS) intervention. This was facilitated by using a three-stage evaluation model which stressed input, process, and product variable interactions. The input variables were defined as the pupils' pretest sociometric scores; the process variables were defined by classroom interactions as they were modified through CATTS intervention; and the product variables were defined by the pupil posttest sociometric scores.

This study was implemented in a field-based public school setting 200 miles away from the Center for Innovation in Teaching the Handicapped (CITH) computer laboratory. Sixteen elementary school teachers and 32 low social status children were the target populations. A sociometric instrument was administered at the beginning of the study to identify the low-status children in the classroom. In each classroom, two low-status children were selected on the basis of having the lowest rankings in the class on the sociometric measures. Classrooms (n = 16) were randomly divided into two matched groups based on initial baseline data on the teacher low-status pupil interactive classroom behavior. During the treatment phase, teachers in Group 1 (n = 8) received 12 CATTS post-session feedback opportunities in the format of hardcopy computer printouts, which were profiles of the teacher interactions with low-status children. Teachers in Group 2 (n = 8) received only 7 sessions with CATTS post-session hardcopy computer printout feedback. At the end of the study, posttest sociometric measures were administered to all children. It was

hypothesized that the rejected children would significantly improve in their social status. Classroom participation among the teacher and target children was predicted to increase as a function of the CATTS intervention. It was also predicted that the classroom interactions of teachers would directly relate to the posttest scores of the rejected pupils and significantly increase from pre- to posttesting periods.

Data revealed that teachers increased their frequency of giving positive reinforcement and asking questions in the classroom as a result of the CATTS data phone intervention. The results also showed that the low-status pupils increased in their classroom interactions from baseline to treatment phases. More importantly, a stepwise multiple regression analysis revealed that the improvement in posttest scores was significantly related to the increase in teacher interactions in the classroom. This study suggests that teacher behavior can be modified so that it positively affects the sociometric status of rejected children in the classroom.

TABLE OF CONTENTS

Page

ABSTRACT ii

LIST OF TABLES v

LIST OF FIGURES vi

LIST OF APPENDICES vii

CHAPTER I. INTRODUCTION 1

CHAPTER II. REVIEW OF THE LITERATURE 11

CHAPTER III. HYPOTHESES 43

CHAPTER IV. METHODS 53

CHAPTER V. RESULTS 70

CHAPTER VI. IMPLICATIONS 90

CHAPTER VII. SUMMARY 100

LIST OF REFERENCES 103

APPENDICES 121

LIST OF TABLES

Page

1. Characteristics of Teachers 54
2. Characteristics of Rejected Children 55
3. Sign Test on AMMF Pre to Post Scores for Targets 71
4. Multiple Regression Summary Table for Experimental Group 1 on the Dependent Variable Posttest Scores 73
5. Multiple Regression Summary Table for Group 2 on the Dependent Variable Posttest Scores 75
6. Summary Table of Percentage Increases for E Group 1 & 2 for Phase 2 78
7. Summary Table of Percentage Increases for E Group 2 79
8. Summary Table of Percentage Increases for E Group 1 & 2, Contrasting Periods 2 & 3 80
9. Summary of Results 82

LIST OF FIGURES

Page

1. Proposed Input, Process, Product Model for Changing Low Social Status 10
2. Experimental Design 46
3. CATTS Data Phone Configuration 62
4. Feedback Format 65
5. Relating Input and Process Variables to Product Variables . . 68
6. Residuals (Y-y) for E Group 1 and E Group 2 76
7. A Model for Changing Low Social Status 92

LIST OF APPENDICES

Page

A. The Button or Coding Box Configuration 121

B. Indiana Interaction Index Categories and Definitions 123

C. Instructions for Sociometric Testing 127

D. About Me and My Friends 129

E. Reading the Computer Printout 132

CHAPTER I

INTRODUCTION

There has been much controversy in recent years concerning the deficient quality of education in our school systems. Criticism comes from many who believe that pupils are not receiving adequate education for the billions of tax dollars funneled annually into education. Teachers and administrators are being held accountable for the educational services they provide, and they are being required to demonstrate the effectiveness of these services (Rucker, 1968; Hostrop, Mecklenberger & Wilson, 1973; Riles, 1973; Wilson, 1969). Consequently, the trend in teacher education research has been toward analyzing the process of teaching and emphasizing standards for teacher performance (Gage, 1972; Hyman, 1968; Rosenshine, 1971).

As a response to educational accountability demands and the new emphasis on teacher performance, many training programs and certification agencies have begun to focus on competency-based performance requirements (Burdin, 1971; Elam, 1971; Schneider, 1973; Turner, 1972). Competency- or performance-based teacher education (CBTE) programs are based on three necessary components: (a) competency skills are stated in behavioral terms, (b) criteria for assessing the competencies of teachers are made explicit and public, and (c) teachers are held accountable for meeting these criteria (Burdin, 1971; Elam, 1971; Semmel & Semmel, 1976; Shalock, 1971). Competency-based (CBTE) programs also emphasize field settings, protocol and training materials, systematic progress, exit requirements and systematic feedback (Andrews, 1972; Burke, 1972; Elam, 1971; Schneider, 1973).

Because CBTE programs focus on the act of teaching, there is a need to develop sufficiently sensitive measurement tools for assessing the teaching process. Many educators have developed observation instruments which record teacher-pupil behavior in classroom settings (e.g., Flanders, 1967; Semmel & Myers, 1971; Simon & Boyer, 1970). Observation instruments focus on teacher performance and are capable of systematically measuring and feeding back relevant performance information.

Observation instruments render a systematic record of teaching acts and scrutinize the process of teaching by taking into account each incident of interaction that occurs (Flanders, 1970). Many observation instruments have been developed. Some focus on the cognitive or affective domain, while others are combinations of the two domains (Simon & Boyer, 1970). Observation tools allow educators to set up specific behavioral objectives to be met by teachers, suggest particular training methods for the teachers, and usually provide reliable measures for attainment of specific teaching skills (Semmel & Thiagarajan, 1973). Thus, observation instruments are clearly useful for building specific teacher competencies (Amidon, 1970; Bondi, 1970; Flanders, 1970; Semmel & Thiagarajan, 1973).

The recognized futility of searching for teacher characteristics as predictors of teaching success (Dunkin & Biddle, 1974), the growing dissatisfaction with present approaches to teacher education (Rosner & Kay, 1974), the availability of more and better analytic tools in teacher education (Flanders, 1974), and the demand for greater accountability (Riles, 1973) have given rise to competency-based teacher education (Andrews, 1972; Burdin, 1971; Elam, 1971; Shalock, 1971). As Rosner (1974) suggests:

> Competency-based teacher education is not an end in itself. It is a process of moving from the present ambiguous state of teacher education to a more clearly articulated program of professional education. Competency-based teacher education (CBTE) is a transitional model for establishing teacher education on a firm theoretical and empirical base ultimately directed to the improved delivery of educational services (p. 295).

Inservice Education

Surveys of inservice education reveal that it is an antiquated system which has not changed in the past 40 years (Bowman, Freeman, Olson & Pieper, 1973; Buskin, 1970; Edelfelt, 1972; Goodlad, 1969; Johnston, 1973; Richey, 1957; Rubin, 1970). Inservice programming was instituted primarily as a function of the increase in numbers of schools and classes, a shortage of teachers, and a large number of nondegree teachers (Richey, 1956). Yet none of these conditions obtain today. The field of education is currently witnessing a decrease in school enrollments and a surplus of teachers, many of whom are overqualified. However, the perpetuation of an outmoded inservice training system continues.

Most inservice program content is fragmented, repetitious, and unmeaningful to classroom teachers. Typical of inservice programming are workshops, visits to other teachers' classrooms, study groups, and September orientations. Buskin (1970) reported that, once teachers finished inservice workshops and returned to their classrooms, "the number of changes carried over into the regular year by teachers was slight (p.22)." He emphasized that administrators may have to admit that inservice, as it exists today, has little, if any, impact on the classroom.

In addition, most inservice training is inconveniently scheduled for the classroom teacher (Bowman et al., 1973; Roberts, 1964). Programming usually occurs after school hours, in the late afternoon or evening, on Saturday or during summer recess or other leaves-of-absence. Yet, as Roberts (1964) points out, "the inservice program will not be as strong as it would be if it were recognized that some important experience can occur only during school time (p. 20)."

Inservice education is held most often on college or university campuses, administrative centers, or educational materials centers (Deshields, 1971; Gazda, 1970; Jaski, 1973; Roberts, 1964). Teachers are obliged to leave their classrooms in order to gain new skills. Dyer (1968), Katz (1972), and Turner (1972) suggest that the teacher's classroom is the most nurturant atmosphere for gaining new teaching skills. Yet a review of the literature indicates most inservice activities do not incorporate the teacher's classroom environment (Johnston, 1973; Rubin, 1973).

Involvement of teachers in most inservice education activities is minimal (Crabbs, 1972; Edelfelt, 1972; Johnston, 1973). However, most research on learning shows that active participants in the learning process will learn at a higher rate than observers. A review of inservice training indicates that most teachers listen to speakers, watch films or other media, or observe a demonstration of teaching methods (Buskin, 1970; Mauth, 1962). The fact that most teachers are passive learners in inservice training programs may account, in part, for the minimal retention and transfer effects (Crabbs, 1972; Johnston, 1973).

Too often, inservice programs are seen by both teachers and administrators as "special activities," not integrally related to the regular school program. Teachers tend to see inservice education as a series of meetings which, when terminated, will complete inservice education until a new topic can be initiated. Once the inservice meetings are over, the topics covered are usually forgotten. Inservice training is not usually thought of as part of a continuous attack upon important daily professional problems which must be faced if education is to improve in the future.

Trainers seem to have only themselves to blame for teacher indifference to inservice education topics. Most programming ends at the inservice workshop, and the transfer of teaching skills to the classroom is never measured. According to Mauth (1962), "Unless actual feedback occurs, there is no more educational defense for an inservice program for teachers, than for a classroom program which has no influence on the out-of-school behavior of children (p. 15)." When teachers attempt to implement a skill learned during an inservice meeting, they generally receive no systematic feedback on their performance in the classroom.

Evaluation techniques of inservice education are most often inadequate because they have neither a formative nor a summative component for evaluating teacher skill growth (Buskin, 1970). Usually, program evaluation consists of a checklist that characterizes the workshop "leaders." Furthermore, it appears that inservice education trainers will perpetuate the antiquated system of evaluation as long as the present modes of training are encouraged.

It is concluded from the above discussion that most contemporary inservice education efforts are ineffective and irrelevant to the needs of teachers. Rubin (1970), in a survey of inservice programs, found:

> Most inservice programs are sporadic and disorganized. There was no attempt to design programs to accommodate individual differences in teachers. Most programs were designed as if

> all teachers were the same. Most often university personnel were used as trainees and their understanding of the classroom was often peripheral. And school administrators and supervisors seldom had the necessary time to devote to training; most programs did not take into account the wide divergence of teaching conditions in different schools and the different pressures teachers had from various types of students, communities, and parents (p. 23).

Application of Technology to Inservice Teacher Education

Turner (1972) emphasized that an innovative direction for inservice training was the use of new technology. He described a model of inservice education that would: utilize an on-line, real-time computer; take place in the classroom during the school day; be individually suited to a teacher's particular classroom needs; assure the teacher's active participation; and give immediate feedback to the teacher on his/her performance. Turner (1972) states:

> - a forthcoming development in computer utilization in teacher inservice education lies in the use of small, inexpensive real-time computers which are connected on-line to classrooms. One method of using this type of system is to code the behavior of the teacher in the classroom as it occurs, transmit it to the computer for virtually instant analysis, and transmit the analyzed behavior back to the teacher so that he/she has continuous feedback about his own instruction (p. 20).

Although not cited by Turner, Semmel has been developing a Computer-Assisted Teacher Training System (CATTS) since 1968. CATTS is based on a closed-loop cybernetic feedback system. The system produces immediate in-session or post-session feedback to a teacher trainee on his/her specific teaching behaviors within microseconds of the event's occurrence (Semmel, 1968; Semmel, Olson, & Weiske, 1971; Semmel, 1975).

CATTS is designed to input classroom data, which are observed by a trained coder, on-line to a computer system. These data are instantaneously analyzed by a small on-line computer, and feedback is generated in microseconds. Basically, CATTS reduces the tedious work of processing and analyzing observation data.

The CATTS configuration has been successfully demonstrated in preservice teacher education laboratory settings (Kreider, 1969; Schmitt, 1969; Semmel, 1968; Semmel & Sitko, 1973; VanEvery, 1971; Weaver, 1969). Many educators would agree that preservice training is an important phase in teacher education, but that it certainly should not be the only focal point of research endeavors (Rosner & Kay, 1974; Shalock, 1971; Turner, 1972). The CATTS system has particular potential as an inservice training tool if adapted for community settings.

It thus appears timely to focus CATTS on inservice teacher-training problems. Survey of the research indicates that inservice education in field settings needs greater attention. There is a current need to develop new, effective delivery systems for training teachers because of the antiquated condition of most inservice programs today.

Modifying CATTS for Inservice Teacher Training

CATTS can be modified to reach field settings. With modifications, CATTS can use the teacher's classroom for inservice education without forcing the teacher to leave the room. Inservice education could be individually suited to specific teacher needs and provide immediate feedback to teachers about their teaching behavior in the classroom. Inservice education could also be conveniently structured so that there would be no interruptions in the daily classroom routine. Thus, it appears that CATTS is at a stage of development that warrants its integration and validation in field settings away from the university laboratory.

Semmel (1972) described a configuration that makes inservice CATTS possible through the use of a data phone delivery system. The data phone system is a long-distance telephone link between a computer center and a public school classroom. A trained observer is located in the field-centered classroom, where he/she codes a teacher's performance on an observation system, recording the interactions on a TOUCH-TONE telephone. The telephone is linked, by a long-distance telephone line, to a PDP-12 computer at the Teacher Education Laboratory (TEL) located at the Center for Innovation in Teaching the Handicapped (CITH) in Bloomington, Indiana. The data input is received by the computer, which is programmed to analyze the input. The computer then transmits the feedback on a teletype printer to the teacher in the field setting within minutes of the coded teacher and/or pupil performance.

In general, modifying CATTS for inservice has great potential as being an efficient educational tool. Since CATTS can be made readily available in any remote setting with access to a telephone, educational concerns such as inservice training can be easily updated. Research indicates that there is a growing demand for inservice to educators who teach the disadvantaged, retarded or learning disabled (Dunn, 1968; Semmel, 1972). Hence, a timely use of CATTS would appear to be in educational settings where "special" education problems exist.

Purpose of the Study

The purpose of this study was to improve the low social status of rejected children in target elementary school classrooms through the implementation of an *in situ* CATTS intervention. This was facilitated by using a three-stage model which stressed input, process, and product variable interactions. The input variables have been defined as the pupils' pretest scores on a sociometric instrument; the process variables have been defined as the effects of CATTS in modifying classroom interactions; and the product variables were defined as the pupils' posttest scores on the sociometric instrument (see Figure 1).

In order to implement this sociometric change study, the Computer-Assisted Teacher Training System (CATTS) data phone configuration was used in a remote field setting. The CATTS inservice model encouraged teachers to interact positively with low-status children. The teachers were asked to increase these specific interactions: (a) ask more high- and low-level questions of the low-status children; (b) call on the low-status children by name more frequently; (c) answer questions which low-status children ask; (d) make encouraging, supportive statements to the low-status children; (e) give positive feedback; and (f) encourage the low-status children to participate in classroom discussions.

This study was designed to demonstrate the effects of immediate post-session feedback on the behavior of the teachers in their interaction with low-status children. The interest was in demonstrating that teachers increase their interactions with rejected children as a function of receiving immediate CATTS feedback on their teaching behaviors. Ultimately, the classroom dynamics were expected to change such that the rejected children became more accepted by their classmates, as evidenced by positive change scores upon sociometric posttesting.

The following chapter reviews the literature relevant to the specific issues concerning the problem investigated in the current study.

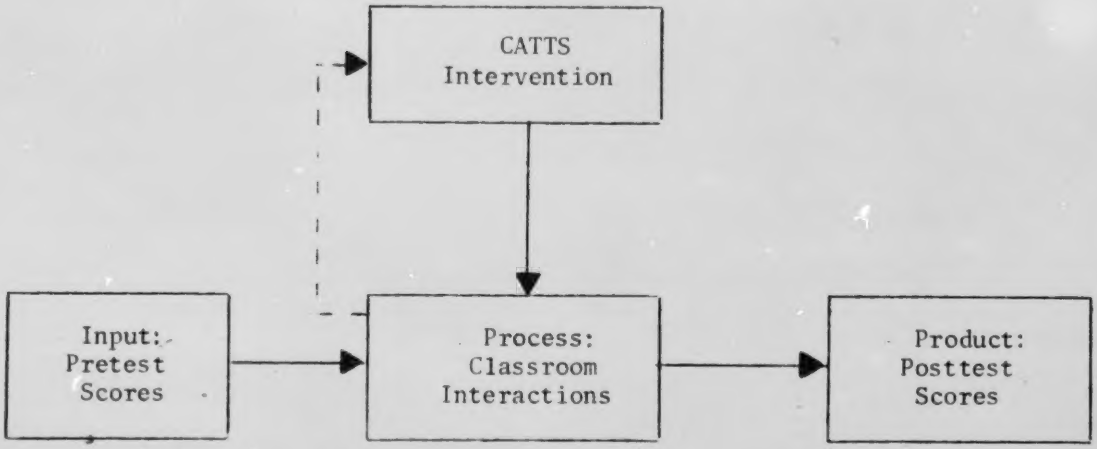

CATTS
Intervention
Input:
Pretest
Scores
Process:
Classroom
Interactions
Product:
Posttest
Scores

Figure 1. Proposed input, process, product model for changing low social status.

CHAPTER II

REVIEW OF THE LITERATURE

A review of the literature on sociometric status and teacher education feedback techniques is the concern of this chapter. These specific areas of the literature are reviewed because the present study investigated the effect of the Computer-Assisted Teacher Training System (CATTS) post-session feedback as an intervention in changing the low social status of rejected children.

Sociometric Status

Sociometric Measurement

Moreno (1934) pioneered the development of a sociometric test technique which evaluated the extent to which pupils are accepted by their peers and assessed the internal social structure of a group. Sociometric tests require peers to choose a given number of associates for some group activity or situation. The basis for the choice is commonly referred to as the sociometric question or sociometric criterion (Gronlund, 1959). The number of times that each individual is chosen is referred to as his/her sociometric status. Each subject then receives a score indicating the number of positive (and/or negative) choices he/she received. The pattern of choices determines the child's status as star, rejectee or neglectee, etc.

Sociometric instrumentation has been repeatedly shown to be reliable and valid in assessing the internal structure of a classroom (Bonney, 1943, 1946; Gronlund, 1955, 1956; Grossman & Wrighter, 1948). The most extensive studies conducted on the reliability question have been those by Bonney (1955). He looked at the stability of sociometric status scores over one-year intervals for a four-year period. Initially, he gave a sociometric test to a group of second graders (N = 45) and then administered the test repeatedly at yearly intervals up to the fifth grade. The stability of this composite sociometric status score was evaluated by correlating the pupils' relative sociometric status between the various grade levels. Stability coefficients ranged from .67 to .84 for the one-year intervals between the successive grade levels. Hence, Bonney demonstrated that sociometric status based on a number of sociometric criteria has a relatively high degree of stability over a period of several years.

Gronlund (1955), in a study of 632 boys and 626 girls at the sixth-grade level, tried to determine the extent to which sociometric status was reliable for three different criterion questions. He looked at the choice of seating companion, work companion, and play companion. The mean correlation coefficients ranged from .76 to .86 for boys, and from .76 to .89 for girls. The highest correlations were between the seating companion and work companion choices for both sexes. The lowest correlations were between play and work criteria. The relatively high degree of correlation (r = .75) points to a general high reliability factor operating in the choice process.

Studies thus far reviewed have been concerned with the general stability of results. Even though a relatively high degree of stability has been indicated, there are data indicating that even more stability occurs at the extreme sociometric status positions (Gronlund, 1955; Thompson & Powell, 1951). These studies demonstrated that stars and rejectees tend to shift less in sociometric positions than those in the middle or average sociometric status categories. This would illustrate that high and low sociometric positions are more stable than the average sociometric rankings.

Validation studies of sociometric instruments have been based on comparisons of teacher judgments and sociometric test results. In one method of validation, teachers were requested to predict the relative social acceptance of their pupils, and these judgments were then compared with results on a sociometric instrument. Gage, Leavitt, and Stone (1955) compared the judgments of 103 teachers in fourth-, fifth-, and sixth-grade classes with the results from a sociometric test. They used a test which required pupils to select five children in their classroom whom they would like to have as classmates if the classroom were split in half. The teachers were then asked to predict which five children each pupil would choose. The mean correlation of $\underline{r} = .48$ was found for the teachers. This indicates a fair degree of relationship between the sociometric test and the teacher's predictions.

In other studies of sociometric test validation, teachers were asked to rank-order their pupils according to acceptance by their classmates. In these series of studies, the relationship between the teachers' judgments and the sociometric results was determined by correlating the teachers' rank-order predictions of their pupils' acceptance with the pupils' actual rankings, based on the number of sociometric choices each pupil received (Gronlund, 1951, 1955, 1956, 1958, 1959).

In general, studies of reliability and validity of sociometric choice tend to indicate that: (a) sociometric status scores are more stable if they are based on several sociometric criteria (Bonney, 1955; Gronlund, 1955, 1959); (b) the longer subjects have known one another prior to the first test, the greater the consistency in sociometric judgments between test and retest (Bonney, 1955; Gronlund, 1955); (c) the larger the number of discriminations required by the instrument, the greater the consistency of sociometric judgments between test and retest (Bonney, 1955; Gronlund, 1955); (d) sociometric status at the extremes is more stable than the average sociometric categories (Gronlund, 1959; Thompson & Powell, 1951); and (e) sociometric results are significantly related to the actual behavior of pupils and to teachers' judgments of social acceptance (Gronlund, 1951, 1955, 1956, 1958).

Personality Traits and Social Acceptance

In the preceding studies, the prime concern was with the reliability and validity of sociometric measures. This section will examine some variables which have been shown to be determinants of social status.

Bonney (1943) found that there were distinct personality traits which distinguish between high and low status in the classroom. Pupils with high sociometric status were characterized as "tidy," "good-looking," "happy," and "friendly." In a similar study Kuhlen and Lee (1943) found that high-status pupils were characterized as good-looking, popular, happy, friendly, and enthusiastic. Moreover, they were said to take jokes well and initiate activities more often than low-status students.

Grossman and Wrighter (1948), using the California Test of Personality, found that high-status children had significantly higher scores than low-status children. Scandrette (1953), in a similar study, found that eighth-grade pupils with low social status felt rejected and insecure in their relationships in school. The low-status students also felt that they were treated badly by students and teachers, and they believed that no one really cared about their welfare.

Several studies have attempted to isolate characteristics of low-status children (Barclay, 1966; Brown, 1955; Hartup, Glazer & Charlesworth, 1965; Smith, 1950; Togio, 1965; Young & Cooper, 1944).

Hartup, Glazer and Charlesworth (1965) looked at peer reinforcement and sociometric status. Positive social reinforcers were characterized by: (a) attention and approval, (b) affection and personal acceptance, (c) submission, and (d) tokens. Negative reinforcers were characterized by: (a) noncompliance, (b) interference, (c) derogation, and (d) attack. The results indicated that social acceptance was significantly correlated with the frequency of positive reinforcement. Rejection was significantly correlated with negative reinforcement.

Smith (1950) investigated characteristics that "best-liked" children had in common, as well as characteristics that "most disliked" children had in common. She found that the best-liked, in contrast to the least-liked, pupils were: nice, good sports, considerate, friendly, and helped others. Disliked children were characterized as: wanting to fight, bothering others, pushing people, not playing fair, and screaming.

Brown (1955) reported that low-status students on the high school level were noticeably "lacking sincerity." In an investigation of 2,500 high school students, Brown found that low-status students: (a) engaged in conduct considered wrong, (b) were insincere, (c) had low ideals, (d) used profane or obscene language, and (e) were stuck up or snobbish.

Young and Cooper, in another study (1944), found that low social status children tended to have low social standards and were not responsive to social norms. Barclay (1966) found that high-status students were more interested in hobbies, dancing, popular music and sports than the low-status students. Barclay also suggested that there might be a gross introversion-extroversion dichotomy which differentiates hiwh from some low social status students.

In essence, these studies showing a relationship between personality and social status all seem to point to the dichotomy that exists between high and low social status children. High-status children were characterized as good-looking, happy, friendly, enthusiastic, and popular. On the other hand, low social status children were characterized as having low ideals, fighting, bothering people, insecure, and using profane or obscene language. Even more important are the findings that indicate low-status children feel insecure, discriminated against, and show signs of emotional instability.

School Achievement and Social Acceptance

Buswell (1953) found that there was a relationship between social status and school achievement. He used a large number of standardized instruments to test the achievement of a population of 300 fifth-grade students. He found that the highly accepted group, as identified and perceived by their peers, was significantly higher than the rejected group in mean achievement.

Muma's (1965) investigation of academic achievement and social acceptance showed that academic achievement was significantly related to the extremes in peer acceptance. Muma found the most liked were the highest achievers and, conversely, the lowest achievers were the least-liked, low-status students.

In summary, these two investigations indicate that there is a strong correlation between academic achievement and social acceptance. Moreover, the data reveal that a student who is secure in his/her interpersonal relations has less personal conflict and thus achieves at a much higher level than a low-status child.

Dentler and Mackler (1962) showed a positive correlation between intelligence and peer acceptance (r = .30 to .50). Studies by Baldwin (1958), Goodman, Gottlieb and Harrison (1972), Gottlieb, Cohen and Goldstein (1973), and Johnson (1950), concerning the rejection of educable mentally retarded children (EMR) in the classroom, give further support to the notion that intelligence is a covariate of social status.

Johnson (1950) looked at the social status of 39 mentally retarded children in a community where there were no classes for the retarded. He found that, based on the results of a sociometric instrument, educable mentally retarded children were less accepted and more rejected than the nonretarded children; that the higher the IQ, the more accepted the child; and that EMR children were rejected because of behavior problems rather than low academic achievement.

Baldwin (1958) studied the social status of EMR children in regular classrooms in a school district which had special education classes. She found that mentally retarded children were less socially accepted than the normals, and that socially inappropriate behaviors such as fighting, hitting, lying, cheating, and bossing were the cause of rejection.

Goodman, Gottlieb, and Harrison (1972) studied the integration of EMR children into a nongraded school setting. Two groups of integrated EMR students were involved in the study. One group was completely integrated and spent the full day in regular classrooms; the other group was in the school but segregated. The researchers found that EMRs who were completely integrated into the school day were significantly more rejected than their nonretarded peers. Furthermore, the integrated EMRs were rejected significantly more often than the segregated EMRs. Intermediate students seemed to reject the EMRs more than younger children in the primary grades did.

Gottlieb, Cohen, and Goldstein (1973), in a study of EMR integration in the regular classroom, found that attitudes of regular children toward EMRs were most favorable in the schools not having retarded children, and that the attitudes were less favorable when regular children had opportunities for social contact with the EMR children.

These research reports indicate that EMR children are not accepted because they do not have the "social graces" necessary to be accepted in a regular classroom. These studies also illustrate the strong relationship between intelligence and social status.

Socioeconomic Status and Social Acceptance

Socioeconomic status has been found to be related to social status in the classroom (Bonney, 1943, 1948; Campbell, 1964). Bonney (1943), in a study of elementary children, found that there was a significant correlation between social status and socioeconomic class. His results indicated teachers as well as students tended to select those students from the higher social classes, and that the low-status students invariably were from lower socioeconomic homes.

In another study, Bonney (1944) investigated the relationship of family size to social status in the classroom. This study followed elementary school students for two academic years. Bonney employed a sociometric technique and correlated the scores to family size and socioeconomic class. His data indicated that there was little correlation between family size and social acceptance. However, his results showed that the least-liked children came from lower socioeconomic backgrounds and, conversely, the high-status students came from the middle- and upper-class backgrounds.

In a study using modified sociometric procedures, Neugarten (1946) found that both elementary and high school students tended to discriminate high- from low-status children on the basis of socioeconomic class. Elkins, in a 1958 study, also obtained results showing a significant correlation between sociometric preferences and socioeconomic status.

Campbell (1964), in a review of peer relations, concluded that there is no single item that can be isolated which contributes to the relationship of socioeconomic status and social status. But he indicated that there were several variables interacting which bring about the correlation. Campbell suggested that frequency of contact, ecological separation, and differences in value orientations all play a part and may reinforce one another.

Teacher Bias and Social Acceptance

Teacher bias has been found to be related to social status in the classroom (Good & Brophy, 1972; Gronlund, 1959; Retish, 1968; Rosenthal & Jacobson, 1968; Silberman, 1969). Atyeo (1972) looked at the extent of modeling among young children in preschool classrooms. During the preobservation, each child was asked to show a preference for one of two similar dolls. The adult model (teacher) then displayed a preference for a doll selected most by the children. The children in the experimental classes imitated the preference of their teacher in selecting their favorite doll at the completion of the experimental period. This suggests that teachers' behaviors are freely imitated by their students.

Silberman (1969) examined how teachers' attitudes towards their students were revealed by their classroom behavior. He specifically studied the attitude areas of concern, indifference, rejection, and attachment. Ten third-grade teachers were interviewed and asked to name children who came to mind when the interviewer asked questions concerning the four attitude areas. Children in the classroom were also interviewed and were asked to predict how often the teacher would interact with them in a typical day.

In addition, teachers were observed with an instrument which recorded teacher-pupil interactions. Silberman's results revealed that: (a) "attachment" students received significantly more positive feedback from the teachers, (b) "concern" students received significantly more teacher contacts, (c) "indifference" students received less teacher contacts, (d) "rejected" students received a significantly greater amount of negative feedback, and (e) "correlations" between students' predictions and actual observations were significantly positive. Moreover, Silberman summarized:

> Many such behaviors aimed at individual students are visible to the other students in the class as well. Thus, it is likely that the daily classroom experience of recipient students is significantly altered by teachers' actions which express their attitudes. These actions not only serve to communicate to students the regard in which they are held by a significant adult, but they also guide the perception of, and behavior toward, these students by peers (p. 407).

Good and Brophy (1972), in a replication of the Silberman (1969) investigation, studied differential teacher behavior toward different students in relationship to the attitudes that teachers held toward those students. Nine first-grade teachers were observed for 40 hours in order to sample pupil-teacher interaction patterns. They were then asked to select children about whom they felt indifference, attachment, concern, and/or rejection. Teacher attitudes and classroom data were analyzed. Results showed that "attachment" students were actively praised by the teacher and were given the most opportunities to answer high-level cognitive demands. "Concern" students initiated more contacts with the teacher, and she sought these children in return. Concern students usually had only the opportunity to answer low-level questions. "Indifference" students were passive in the classroom, never answered questions, and had the least contact with the teacher. "Rejected" students were most avoided by the teacher, most criticized, and most neglected when they initiated contact with the teacher.

Jackson, Silberman, and Wolfson (1969), in a study of teacher attitudes, found there was differential treatment of students. Employing an interview technique with third-grade teachers, the investigators asked teachers to describe the first two children in their class who came to mind. Data revealed that the first two children remembered were perceived by the teacher as having many positive traits. In contrast, the last two children, the rejected ones, were characterized by negative descriptions and seen as nonconforming in the classroom.

Differential treatment of students was also illustrated by Good (1968) in an investigation of how teachers interact differently with children perceived as high or low achieving. The investigator asked four first-grade teachers to rank-order children according to achievement status. Teachers were then observed on the Good observational instrument. Data indicated that those students perceived by the teacher as high achievers were given significantly more opportunity to answer high-level questions. Good's data also showed that high achievers received significantly more positive feedback and low achievers received significantly more negative feedback.

Anderson and Brewer (1946) studied how the dominative and socially integrative behavior of the teacher influences pupil behavior. Dominative behavior was characterized by the use of force, commands, threats, and attacks against the children by the teacher. In contrast, socially integrative behavior reflected the teachers' use of cooperation, discussions, and considered judgment of the student. Integrative behavior was also characterized by adaptive and flexible teacher behavior which encouraged children to express their opinions. Anderson and Brewer found that, where teachers used dominative behaviors, pupils tended to reduce social participation and increase personal conflicts. On the other hand, pupils whose teachers displayed integrative behavior were spontaneous social participants and had constructive social responses to each other. Furthermore, Anderson and Brewer found that both types of teacher behaviors seemed to spread throughout the room, socially integrative teachers having rooms that were cooperating and emotionally stable, and dominative teachers inciting conflicts and ill will in the classroom. This study clearly illustrates how critical the teacher behavior factor can be in setting socio-emotional climates in a classroom.

In summary, teachers have been found to selectively interact with children. More important, teachers' behaviors towards rejected children seem to cue classroom peers on how the teacher wants them to interact with the low-status children.

Rosenthal and Jacobson (1968) reported evidence on the influence of teacher expectations on pupil performance. A test of potential for intelligence was given to 18 classrooms. Twenty percent of the students in a classroom were randomly selected by experimenters and labeled as "intellectual bloomers." Teachers in the school were given false psychological data that reported that the "bloomers" had potential for unusual intellectual gains. Eight months later the students were posttested using the same IQ test. Students for whom the teacher had been led to expect greater intellectual gain showed a significantly greater gain in IQ score than did the control children.

In a similar study, Beez (1970) investigated the effects of prior biasing information about students on the expectation of teachers and on future teaching behavior. He selected 50 children from Headstart and assigned the pupils to high and low ability groupings. Sixty graduate students attending summer school were assigned as tutors. Falsified psychological data on the children were given to each tutor. The low achieving group's folders contained data which indicated a poor prognosis for achievement. In the high achieving group's folders, there were data to indicate that the children had great potential for academic growth. The tutors worked with the children for several weeks on specific tasks. Beez found that 81% of those teachers who believed that they had a high-achieving student taught eight or more words, while only 13% of the teachers of the low ability group tried to teach as many words.

The Beez (1970) and Rosenthal (1968) studies both reveal that a teacher's predisposition to the success or failure of his/her students influences the child's performance. These studies indicate that teachers' prior expectations of academic as well as social performance do influence their teaching behaviors. Implications which can be drawn from these findings suggest some strategies for intervention. First of all, social status intervention should be initiated by the teacher because he/she has been characterized as the most influential significant adult in the classroom. Secondly, teachers should be made aware of their teaching behavior patterns. Thirdly, teachers should be given immediate feedback on their teaching profiles.

Low Social Status and Intervention Strategies

Review of intervention studies shows that few have incorporated efficient strategies in changing social status in the classroom (Chaires, 1966; Kinney, 1953; Lilly, 1971). Rather than use the teacher as the change agent in the intervention strategy, these studies have: (a) taken low-status children out of the classroom and given them individual and/or group counseling, (b) had children taken from their classrooms by experimenters and given socially integrative skills, or (c) given low-status children "star" roles, such as a lead in a play.

Chaires (1966) tried to change the status of mentally retarded children in intermediate and junior high special education classes. Sociometric instruments were used to identify the "stars" and "rejectees" of the classrooms. Rejectees in each classroom were randomly assigned to experimental and control groups. Each classroom's experimental group was composed of two rejectees and two stars. The stars and rejectees practiced for a classroom play for five weeks. Chaires found that experimental rejectees gained significantly in peer acceptance and also in self-concept. In contrast, rejectees in the control group did not make similar gains. Chaires concluded that change resulted from the subjects' participation in a high-status activity (i.e., giving a play) and their association with "stars" in the classroom. But the data revealed that social status change was short-term and that there was no follow-up for the low-status children.

In a partial replication of Chaires' (1966) investigation, Lilly (1971) tried to control for the various factors identified in the Chaires study. Factors identified for Lilly's study were (a) removal of experimental students from the classroom, (b) interaction with adult experimenters, (c) interaction with high acceptance peers, (d) participation in the skit before the class, and (e) general increased saliency of the experimental children to the other members of the class. In order to isolate and control the factors previously identified, six experimental groups were set up, with eight subjects in each group. Pretests, posttests, and follow-up tests were given using sociometric instrumentation. Statistical analysis revealed that, as a group, experimental subjects gained significantly in social acceptance in contrast to the nontreatment control groups. In the follow-up testing, initial gains were not maintained. Of the six intervention variables studied, none provided significant gains in social acceptance.

Kranzler, Mayer, Dyer and Munger (1966) made an attempt to assess the results of counseling with low-status fourth-grade students. Sociometric status was the criterion for determining low status. A sociometric device was administered to four fourth-grade classrooms. Students of low sociometric status were randomly assigned by classrooms to one of three treatment conditions: (a) counseling, (b) teacher guidance, or (c) control. When treatment conditions were compared, the differences favored the counseling condition, and the social status change persisted over a period of seven months. The possibility of a temporary teacher influence on the sociometric criterion was indicated; therefore, the effect of the treatment in changing social status was questioned.

In a replication of Kranzler, et al. (1966), Mayer, Kranzler, and Mathes (1967) compared the effects of counseling and selected guidance techniques on fifth- and sixth-grade low-status children. Sociometric status and teacher ratings of students' social skills were selected as criteria. Subjects were selected from students who were in the lower half of their classes in sociometric status and who indicated that they wanted to get along better with their peers. From each of seven classrooms an equal number of subjects was randomly assigned to three treatment conditions: (a) counseling, (b) teacher guidance, and (c) control. When the treatment conditions were compared, no statistically significant differences were found.

These four studies of social status intervention have had limited success in changing low social status of children (Claires, 1966; Lilly, 1971; Kranzler et al., 1966; Mayer et al., 1967). Only one study, Kranzler et al., 1966), showed maintenance of the intervention change. The writer suggests these results indicate a more influential individual should be the prime intervention agent. A teacher can make social status changes without having to take children out of the classroom. A teacher can adapt to daily social changes in the classroom. Thus, the teacher is the most efficient change agent of social status in a classroom. The following studies look at teachers as agents of change in social status.

Teachers as Change Agents of Social Status

Atkinson (1949) used the teacher as the prime intervention agent in changing social status in the classroom. The investigator studied the use of sociometric data in establishing work groups in the classroom. Rejectees and isolates were placed with high-status students in various training experiences. During a two-year period Atkinson found there were fewer isolates and rejectees. Atkinson attributed these social status changes to the opportunity given to isolates and rejectees to associate with high-status children and demonstrate "special skills."

Taba and Elkins (1950) studied social acceptance in an eighth-grade classroom which used group discussion, problem solving, and open theme writing in trying to change the rejection status of some children. Taba used sociometric tests and sociometric interviews to gather data on a pre and posttest basis. Her results showed that sociometric status can be changed by using these techniques. However, the lack of control groups was a limitation of this and Atkinson's study.

Kinney (1953) studied the use of various grouping techniques in changing social status. Employing the teacher as the intervention agent, he compared experimental classrooms using flexible groups to control classrooms using ability and intact groups. Sociometric results indicated that in five months it was possible to significantly increase social acceptance of children by using flexible grouping. An additional finding showed that the number of rejectees in the intact groups increased during the experiment.

Retish's 1968 study was one of the first controlled studies to use the teacher as the prime intervention agent in changing social status of pupils in the classroom. Retish tried to control the verbal reinforcement frequency of teachers who interacted with low-status children. He theorized that low-status children were rejected by the teacher because of low achievement profiles. The teachers' rejection attitudes were then passed on to their classroom peers. Using sociometric data, Retish selected the four most rejected children in the classroom and randomly assigned them to control and experimental groups. Teachers were asked to verbally reinforce the experimental child three times a day for three weeks. Retish found that the experimental rejectees significantly gained in social status, but the teacher's posttest ratings did not reflect any changes in attitude toward the rejected children. A closer look at these data, however, indicates that the teacher rating scale asked the teacher "to rate children in the classroom on the degree to which he/she thought the child would benefit from another class." Thus, little attitude change could have been expected, since it was a question of placement rather than attitude.

Leyser (1976) used the teacher as the primary intervention agent. He used a roleplaying module to give teachers skills in working with rejected children in the classroom. He was specifically concerned with the effect of the intervention module on: (a) changing the social status of rejected and isolated children, (b) changing peer perception of the rejected and isolated classmates, and (c) changing the teachers' perceptions of the rejected and isolated students. The module contained roleplaying lessons and story problems dealing with appropriate or inappropriate social behavior. In addition, Leyser held workshops throughout the experiment which helped teachers to administer different roleplaying activities included in the module. Results revealed no significant positive changes in social status of the isolate children, nor positive changes in peer perception of these children. In addition, teachers' perceptions of the rejected and isolated children were not significantly changed either. Nonetheless, this study did show some strong trends in changing social status in the classroom with roleplaying because of the emphasis on direct teacher intervention through the application of trained teaching skills.

Brown and MacDougal (1973) also used the teacher as the intervention agent in changing social status of rejected children in the classroom. Data were collected from 14 elementary classrooms. The intervention method was an inservice workshop which gave the teachers several skills for building good social environments. The major topics for the six weekly training sessions were (a) interdependence of affective and cognitive behaviors, (b) peer interaction and group interaction, (c) adult interaction with children, (d) creation of effective learning climates, and (e) systematic instruction in socialization skills. The results indicated that rejected children perceived themselves as more adequate in their relationships with their classmates and their teachers. More important, Brown also found that teachers tended to cue children in how to perceive other children in the classroom as either high or low status. This study indicated that a teacher does, in fact, teach children many more things than subject matter.

Bonney (1971) investigated the rejection status of children in 12 elementary classrooms. He chose four classrooms as the experimental group and eight classrooms as controls. Bonney's intervention methods included observation of an experimental classroom, biweekly conferences, and a newsletter. Feedback from the observation session was given to the teachers via the newsletter. The newsletter also suggested techniques for teaching social skills in the classroom. Biweekly conferences were held with teachers to discuss teacher interaction skills which promoted social acceptance in the classroom. Results showed that there were no significant differences between the experimental and control groups in social status change.

There were obvious methodological errors in this study, such as the contamination of control and experimental teachers, but the study still contained some critical elements. Though observational instrumentation conferences and feedback were tried, they were used poorly. Conferences should have been held immediately after the observation period in order to discuss teaching profiles.

Amidon and Hoffman (1965) used observation data, feedback, and conferences more efficiently than Bonney (1971). These experimenters conducted a study to see whether teachers could change the rejected status of children in the classroom when given specific skills to work with low-status children. Amidon and Hoffman gathered data in 12 elementary classrooms. Half of the classes were randomly assigned to an experimental group and the other half to a control group. A sociometric test was used to gather data on a pre/post design. The intervention consisted of eight meetings and three individual conferences with the experimental teachers. The first five group meetings were used to teach the experimental teachers an observation system for analyzing classroom interaction. They were taught this system so that they might acquire an objective view of the classroom and become aware of specific pupil interactions occurring in their classrooms. Also included in the treatment were three twenty-minute tape recordings which were made in each teacher's classroom. The teachers were asked to analyze their own teaching sessions with the observation system. Immediately afterward, each teacher would discuss his/her teaching profile with the experimenter. The last three meetings were concerned with the social structure of the classroom, research on the socially isolated child, and the data gathered in the school on sociometry, attitudes, and personality. The data indicated that the position of the rejected children in the experimental group was significantly improved over the year. The number of children in the experimental group whose position improved was more than four times the number of children who improved in the control group.

Studies which have used the teacher as the prime intervention have shown that social status can be significantly increased (Amidon & Hoffman, 1965; Atkinson, 1949; Brown & MacDougal, 1973; Kinney, 1953; Retish, 1968). Only one study, Bonney (1971), showed no significant change in social status, but methodological problems as well as poor use of feedback and observation instrumentation may account for these results.

A summary of the literature which deals with sociometric status shows that sociometric instrumentation has been valid and reliable. Secondly, there are specific determinants of social status in the classroom: (a) personality traits; (b) achievement status; (c) socioeconomic class; and (d) teacher bias. Finally, intervention studies of social status in the classroom have clearly shown that the teacher has more success as the prime intervention agent in changing social acceptability.

The next section of the literature review is concerned with teacher education. Effective training underlies the teacher's ability to affect classroom outcomes such as changes in sociometric status. The review will focus on studies which incorporate feedback as a central mode of trainee skill development.

Teacher Education - Feedback Techniques

If improvement in teaching behavior is expected, then teachers must study their teaching profiles and experiment with and practice effective teaching behaviors. A large part of this change process can be implemented through feedback of relevant teaching behaviors using observation instruments (Flanders, 1970, 1974; Simon & Boyer, 1970). Observation instruments may be used for feedback based upon objective data about teacher-pupil interaction in the classroom.

In the past, educators have usually given feedback in the form of subjective supervisory evaluations, but research indicates that the advent of observation systems has made supervisory feedback more objective. More importantly, observation instruments are being taught to classroom teachers so that they are made more aware of their teaching behaviors (Hough & Ober, 1967; Lohman, Ober & Hough, 1967). Hough et al. (1967) found that:

> In a sense, when teachers use these systems to obtain feedback for self-supervision, they are performing "micro research" on their own behavior in their own classroom. From this they gain data with which to formulate new hypotheses about the effectiveness of their own teaching technique to test in their next micro research "study" (p. 22).

Supervisory Feedback

Hough and Amidon (1967) found that teachers who received interaction analysis feedback from their supervisor on classroom behaviors were more "indirect" in their teaching approach than controls who received traditional subjective supervisory evaluation.

Zahn (1967) investigated the effect of objective feedback compared to traditional subjective supervisor feedback on preservice teachers. He found that student teachers undergoing instruction and supervision using objective feedback (interaction analysis) had more positive teaching attitudes after student teaching than those given subjective feedback.

In a similar study, Bondi and Ober (1969) examined the effect of traditional subjective feedback (in contrast to objective feedback from an observation instrument) on the teaching behaviors of elementary preservice teachers. Following the weekly teaching session, teachers in the experimental group were asked to attend a feedback conference. A computer printout was given to the teachers which contained a profile of their teaching behavior. The supervisor made no attempt to classify the teaching behaviors as inefficient or sufficient. The teachers were then asked to compare their weekly performances against one another. In contrast, preservice teachers in the control group attended weekly feedback conferences in which the supervisors gave their opinion and recommendations on the lessons taught. The results showed that the experimental teachers: (a) demonstrated more acceptance and clarification of student ideas, (b) used more praise, (c) used more positive affect, (d) used more "indirect" as opposed to "direct" teacher talk, (e) used less corrective feedback, (f) asked more questions, (g) lectured less, and (h) gave fewer directions.

In summary, these three studies indicated that systematic feedback from a supervisor is superior to more traditional subjective types of feedback.

Visual Feedback from Communication Media

Teacher educators have used communication media such as photography, videotape recordings (VTR), and motion pictures in giving feedback to preservice teachers. Videotape recordings have probably been used most often in recent teacher education research. The microteaching concept has used the VTR most extensively. Microteaching is a scaled-down version of teacher-pupil interactions in a classroom. The setting is usually a small room with a preservice teacher and one to five students. The entire teaching session is videotaped. The preservice teacher then views the videotape with a supervisor and critiques the microteaching session. The teacher then reteaches the lesson trying to modify his/her teaching performance in accordance with preceding feedback. Various studies report success using the microteaching concept to modify teaching behaviors (Allen & Young, 1966; Asheson, 1964; Fortune, Cooper & Allen, 1967; Goodkind, 1969; Olivero, 1965).

Goodkind (1969) investigated the effects of a microteaching experience on preservice teachers. Teachers were assigned to an experimental group which received critiques while viewing a videotape recording of teaching performance in the presence of a supervisor. The control group received critiques on their teaching performance but did not get to view the videotape recording. Goodkind found that the experimental group displayed: (a) more awareness of personal habits and manners, (b) more awareness of teaching arts and techniques, and (c) more awareness of the problem in pacing instruction.

Bell (1968) conducted a study with preservice home economics teachers using the microteaching format. She used a control group which engaged in student teaching without the microteaching and an experimental group which participated in microteaching after their student teaching day. She found that the experimental group made significant gains in teaching performance in comparison to the control group.

In another study, Bush (1968) randomly divided 60 preservice teachers into two groups. Half were given the standard observation and teacher aide experience, and the other half used the microteaching concept. The microteaching group performed at a higher level of teacher competence than did the traditionally prepared group, and performance in the microteaching situation predicted subsequent classroom performance. Furthermore, there was a significant increase in the accuracy of candidates' self-perception of teaching performance, and candidates receiving student appraisal of their effectiveness improved significantly more than candidates not having access to such feedback. Finally, trainees' acceptance of the value of microteaching was high.

Reporting on a microteaching clinic, Fortune et al. (1967) found that significant teacher behavior changes occurred over the treatment period. Nine of the first 12 items on the Stanford Teacher Competency Appraisal Guide showed a .01 mean gain. This mean gain was an indication of the improvement of the interns. In addition, a question designed to evaluate trainee acceptance of microteaching indicated that 70% of the interns felt that the microteaching experience had been helpful in acquiring specific competencies.

Kallenbach, Gall, and Meredith (1969) compared the effectiveness of elementary preservice teachers trained in a summer microteaching clinic with that of preservice teachers who received more conventional classroom observation and student teaching experience. Contrary to the results reported by Bush (1968) in a similar study, the microteaching approach was not found to be superior to more conventional methods of training. However, it was concluded "that microteaching is an effective training strategy since it achieved results similar to those of conventional methods, but in only one-fifth the time with fewer administrative problems (p. 16)."

In summary, the microteaching concept achieves positive changes in teacher behavior. Also, preservice teachers' acceptance of microteaching as an effective training method is high. Finally, feedback seems to be the crucial dimension of microteaching in terms of changing the trainees' behavior.

McGraw (1966) investigated the effects of three different feedback conditions on preservice teachers in modifying their classroom behavior toward their pupils' training needs. Feedback using both 35mm time-lapse photography and a bar graph of their teaching behaviors was given to one group. Another group received only the bar graphs of their teaching behaviors. The third group did not receive any feedback. Results showed that the group of preservice teachers with time-lapse photography and bar graph feedback performed significantly better than the groups in the other two feedback conditions.

Leonard, Giles, and Paden (1971) investigated whether preservice teachers receiving supervisory feedback, in addition to video and audiotape replays, would demonstrate a greater change in their verbal interactive behavior than preservice teachers who only received subjective supervisory feedback. Results showed that those receiving audio and videotape replay in addition to supervisor feedback used less "direct teaching influence and more indirect teaching influence," as categorized by Flanders, than those teachers who only received supervisor feedback.

Rule (1972) tested the effects of three feedback conditions in changing three teaching behaviors of preservice teachers: (a) giving more praise, (b) giving more on-task contacts, and (c) giving more off-task contacts. The three feedback conditions investigated were: (a) instructions and experimenter feedback, (b) analysis of videotape recording of trainees' teaching behaviors, and (c) a direct intervention procedure in which the experimenter temporarily replaced the teacher trainee whose teaching behavior fell below criteria. Rule found that the direct intervention was most effective in changing a teacher's behavior. Fewer changes in the preservice teacher's behavior occurred in the instructions plus feedback condition.

A summary of communication media used in giving feedback indicates that photography plus bar graphs, video, and audiotape records are effective in changing preservice teachers' behaviors. Rule's (1972) study, which indicates that direct intervention by an experimenter is most effective in changing trainees' behavior, raises the question of whether this training approach has a lasting effect on teaching behavior. This writer suggests that a stronger study would have shown maintenance of this change and questions whether trainees really were internalizing good teaching strategies or were in fear of the experimenter's option.

Immediate Feedback

Immediate feedback has many connotations, but, in the studies to be reviewed, immediate feedback is virtually synonymous with instantaneous feedback. Immediate feedback has been shown to be the most effective method of changing teaching behavior, because of its immediate relevance and applicability to behavioral events that have just taken place (Locke, Carledge & Koeppel, 1968).

Dowd and Blocker (1974) investigated the effects of immediate reinforcement and preawareness on the acquisition of a desired behavior by beginning counselors. Three treatment groups and a control group were instituted. One group was given immediate reinforcement for exhibiting desired behavior, and the second group was made aware of the desired behaviors they were to institute prior to the counseling session. The third group was made aware of the desired behavior prior to the session and given immediate feedback. This feedback was given by a machine with green and red lights at the top. The supervisor, in an adjacent observation room, controlled the machine. The experimenter flashed the lights as the counselor made the desired response. Results indicated that the treatment group which combined both awareness and immediate feedback was significantly superior to the other two treatment conditions.

Johnson (1968) used a booklet to give preservice teachers immediate feedback on the correctness of pupil behaviors observed on videotapes. The instructional videotape used in this experiment consisted of 21 brief scenes of pupil-teacher interactions. Each scene was accompanied in the programmed booklet by a question which focused the viewers' attention on a specific aspect of the scene, by a multiple-choice item to be answered after the scene was shown, and by immediate information as to the correctness of the response. Subjects in Experimental Group 1 read the question, viewed the scene, selected the alternative answer which best described the behavior in the scene, and turned to another page to get immediate feedback on the response. Subjects in Experimental Group 2 viewed the videotapes and read the question, but received no feedback on correctness of response.

Subjects in the control group did not see a videotape; they listened to an audiotape on how to be a skillful observer. Group 4 received no training. Analysis of data indicated that preservice teachers' performances in Experimental Group 1 were significantly superior to those in the other treatment groups.

These two studies have shown how immediate feedback in the form of lights and booklets has been proved superior to other methods in changing preservice teaching behaviors.

Concurrent Feedback

The following studies of concurrent feedback will be reviewed to show how instantaneous feedback changes preservice teachers' behavior.

Heinrich and McKugan (1969) tested the effectiveness of concurrent feedback by means of colored cards. Preservice teachers were randomly assigned to experimental and control groups. Those trainees in the experimental group were given concurrent feedback by a supervisor who raised color cue cards whenever desired or undesired behaviors were exhibited. Control subjects received delayed supervisory feedback. Results indicated that the experimental group was significantly superior to the control group in reducing discrepancies between the teachers' beliefs and their supervisors' opinions concerning their teaching behavior.

Carlson (1974) studied the effect of immediate verbal feedback on increasing the qualitative levels of empathic verbal performances of counselor trainees. Twenty-four subjects were randomly assigned to the following conditions: (a) immediate feedback, (b) feedback and instruction, (c) equipment present, and (d) control. The immediate feedback condition consisted of receiving immediate verbal feedback through an ear bug (communication system) from the supervisor. When empathic responses occurred, feedback was given. Feedback consisted of the two words "excellent response." The feedback and instruction condition consisted of random comments by the supervisor. The equipment in the "present" condition consisted of an ear bug, but subjects did not receive any type of feedback. The control group did not receive any type of treatment. Results indicated that groups receiving verbal immediate feedback, and feedback and instruction, were superior to the control and the equipment present groups.

In a similar study, Reddy (1968) employed an auditory device that gave feedback to counseling trainees on empathic responses elicited. Reddy's results showed that those trainees who received immediate auditory feedback were superior to those treatment groups receiving delayed or no feedback.

Spaulding (1971) also investigated the effect of an audio device or receiver on acquiring specific behaviors which were agreed upon by the teacher and experimenter. The teacher was equipped with a transistorized audio receiver and was prompted by an observer in an adjacent room. Data showed that teachers readily acquired prespecified teaching skills.

Thomas and Cooper (1969) also reported using concurrent audio feedback in changing teaching behavior towards target children in the classroom. Data indicated that teachers changed their behavior as well as the target pupils' behavior.

In another study, Thomson, Holmburg and Bear (1971) investigated the effects of several types of feedback procedures in the acquisition of primary reinforcement skills. Preservice teachers were found to increase desired teaching behavior when immediate observer feedback was given. The on-the-spot feedback (audio) produced the desired results nine out of twelve times.

CATTS feedback. Semmel (1968) developed a closed-looped feedback system to train preservice teachers. The Computer-Assisted Teacher Training System (CATTS) allows for direct data input into a computer by an observer using an observation-coding instrument. These data are instantaneously stored and processed, reducing the tedium associated with analysis of observational data. More important, CATTS renders instantaneous feedback to the teacher on classroom behaviors.

VanEvery (1971) attempted to control for many of the methodological problems in earlier CATTS studies (Kreider, 1969; Schmitt, 1969; Weaver, 1969). She took CATTS out of a laboratory setting and into a field setting (a speech therapy clinic). VanEvery studied the social reinforcement patterns of speech therapy trainees who worked with aphasic patients. A remote telephone line was used to transmit data between the clinic and the CATTS laboratory facility. Observations of the trainees were coded on-line by a trained observer in the room and transmitted by telephone hookup to the computer, which gave feedback in real-time. An event recorder was used as the facilitator of the feedback. The recorder traced a pattern representing training objectives on a moving belt of paper. VanEvery found that those trainees who received CATTS feedback used significantly more stimulus response patterns than the controls, who were given more traditional forms of feedback. Thus, VanEvery was the first to demonstrate the utility of CATTS in a field setting.

CATTS has been an ongoing research project in training preservice special education teachers for the last six years at the Center for Innovation in Teaching the Handicapped (CITH) at Indiana University. Several early studies have shown promise for using CATTS as a preservice training system. These pilot studies have demonstrated the capability of CATTS to provide instantaneous feedback to several classrooms simultaneously (Semmel, 1975).

Semmel and Sitko (1973) demonstrated the effect of CATTS immediate visual and delayed (printout) feedback on increasing various cognitive and management behaviors of preservice teachers in a laboratory setting. The study had three phases. First, trainees learned an observation system. Then a baseline measure of trainees' cognitive and behavioral control strategies in the classroom was secured. Finally, trainees were given CATTS immediate and/or delayed feedback conditions and a measurement of classroom behaviors incorporating these behaviors. A single-organism multiple baseline design was selected as the design of the project. Results showed that all trainees in both treatment conditions significantly increased their baseline rate of performance as a result of the CATTS feedback. The trainees in the CATTS feedback condition who received scope and printout conditions, however, increased their criterion rate of responding more significantly than those trainees in the delayed printout-only condition.

In summary, review of immediate feedback studies has shown that: (a) immediate feedback is significantly superior to other more traditional forms of feedback; (b) concurrent feedback is significantly superior to delayed feedback; and (c) immediate feedback using the Computer-Assisted Teacher Training System has shown some success in training preservice teachers.

The second half of the literature review on the effects of feedback has indicated that supervisory feedback, when given in a systematic fashion, is superior to traditional subjective feedback. The review has also shown that visual feedback can be effective using several communication media modes, and that microteaching can be an effective tool for teaching critical teacher behaviors. Finally, the literature reviewed has revealed that immediate feedback is significantly superior to more traditional forms of feedback.

This chapter has reviewed the research literature pertinent to the present investigation. The next chapter will delineate the hypotheses relevant to outcome behaviors.

CHAPTER III

HYPOTHESES

Theoretical Framework

The major objective of the study was to increase the low social status of the target or rejected children, and an increase in social acceptance was defined by an increase in posttest sociometric scores. Therefore, it was hypothesized that a series of process changes would take place in the classrooms which would ultimately cause an increase in the posttest scores of the rejected pupils. It was predicted that the CATTS feedback intervention would make the teachers more aware of their interactions with the target children. The CATTS feedback would also cause the teachers to try to increase the quality and frequency of their classroom interactions with the rejected target children. This change in interaction patterns would change the group dynamics and transfer to classroom peers who would adopt a more accepting view of the rejected children. The improved acceptance of the rejected target children would be reflected as an increase in posttest scores on the sociometric instrument.

Sociologists have extensively studied small group dynamics, and leadership functions [e.g., Hollander and Julian (1968), Katz & Kahn (1947), Knickerbocker (1948)] and suggested that the ability to provide reinforcements is related to leadership. Such sociological theories can be translated in terms of pupil-teacher interaction (Marak, 1964). The teacher is the one who takes a leadership role from the social responsibility norm (Gerard & Miller, 1967). The teacher is considered as the group leader who can influence the group dynamics. In the present study, the teacher was expected to be instrumental in increasing the acceptance of children rejected their peers. The teacher was thus viewed as the logical change agent and was provided with CATTS feedback in order to develop the skills necessary to bring about the desired change.

The classroom group dynamics were seen as an equilibrium in which each child takes his place in the social order. The sociometric pretest scores defined the input to the structure. As a result of the CATTS feedback, the teachers were expected to increase their participation with the target children. This was hypothesized to result in increased participation by target children, which would change the classroom group dynamics, eventually leading to acceptance of the target children by their peers.

Three-Stage Evaluation Model

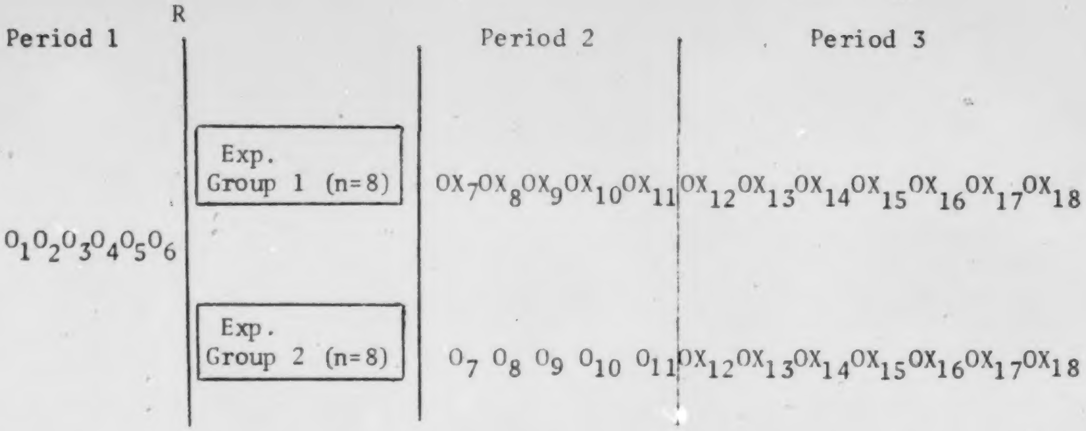
A major criticism of teacher behavior studies is that often, only the process variables are studied, and the relationship between process and product variables is frequently neglected(Heath & Nielson, 1974). In order to avoid this criticism, some theorists suggest using a three-stage component model in evaluation (Gagné, 1970; Mitzel, 1957; Semmel, Semmel, & Morrissey, 1976) because they believe that input and process directly affect the outcome or product variables. In the present study, a three-stage evaluation model was used to determine the interactions occurring between input, process, and product variables.

Input variables: Sociometric pretest scores. At the beginning of this study, a sociometric instrument, "About Me and My Friends" (AMMF), developed by Kaufman, Semmel, and Agard (1973), was administered to 500 children in 16 classrooms, grades 1-6, in an elementary school. The sociometric instrument AMMF was used because it required neither reading nor fluent writing skills, yet indicated children's attitudes toward their classmates (see Appendix D). The AMMF pretest scores constituted the major input variable of the study.

Process variables: Classroom interactions. In the preliminary phase of this study, teachers were monitored as they interacted with the rejected pupils during the first 5 baseline observation periods (see Figure 2). The monitoring was conducted via the Computer-Assisted Teacher Training System (CATTS) using the data phone configuration. The data collected from the first 5 observation periods were analyzed to determine the frequency of teacher interaction with the rejectees. Through analysis of the frequency data, the teachers were ranked by their frequency of interactions with their rejected pupils. Pairs were formed by descending rank and a member of each pair was randomly cast into each of the experimental groups. One group was labeled Experimental (E) Group 1 and the other, Experimental (E) Group 2.

In the next phase of the study, teachers in E Group 1 received five sessions (Period 2) of immediate post-session feedback in the form of a hardcopy computer printout, which gave an analysis of his/her classroom interactions with all pupils in the class. It was predicted that those teachers in E Group 1 would evidence a greater positive increase in their classroom interactions than those in E Group 2, since, at this stage of the study, the latter was not receiving feedback.

In Period 3 both groups of teachers received seven feedback opportunities via the CATTS data phone configuration. Thus, both groups of teachers were receiving post-session feedback concerning their teaching behaviors during this final stage of the treatment, or the process component of the model (see Figure 2). Furthermore, because of the positive influence of the feedback given in the CATTS printout, a change in group dynamics was


Period 1
R
Period 2
Period 3
Exp. Group 1 (n=8)
$OX_7 OX_8 OX_9 OX_{10} OX_{11} OX_{12} OX_{13} OX_{14} OX_{15} OX_{16} OX_{17} OX_{18}$
$O_1 O_2 O_3 O_4 O_5 O_6$
Exp. Group 2 (n=8)
$O_7\ O_8\ O_9\ O_{10}\ O_{11} OX_{12} OX_{13} OX_{14} OX_{15} OX_{16} OX_{17} OX_{18}$

Where R = Random assignment of subjects (pairs)

0 = No feedback

OX = Feedback observations

Figure 2. Experimental design.

expected to occur, and it was predicted that this change would be affected by the number of feedback opportunities. Because Experimental Group 1, Period 2 received CATTS feedback initially and Experimental Group 2, Period 2 did not, there was expected to be a significant difference between Experimental Group 1, Period 2 and Experimental Group 2, Period 2. Lastly, Experimental Group 2, Period 3 percentage improvements were predicted to be comparable to Experimental Group 1, Period 2 (see Figure 2). Therefore, the percentage of improvement was expected to increase for all teachers and target categories.

Three hypotheses follow from the above reasoning:

Hypothesis 1:

Teachers receiving relatively immediate CATTS feedback about specific interactions with rejected pupils reveal significantly higher percentage increases in three teacher categories - makes statement, gives positive reinforcement, and asks questions - when compared to teachers who do not receive such feedback.

In the present study, evidence in support of this hypothesis was sought from the comparison of teachers randomly cast into Experimental Group 1 and Experimental Group 2 during five trials following a period of baseline observations (Period 2) (see Figure 2).

Hypothesis 2:

Teachers who receive immediate CATTS feedback following a period of baseline observations reveal a significant percentage increase in the three teacher categories: Makes statement, gives positive reinforcement, and asks questions.

Within the context of the present study this hypothesis gains support if Experimental Group 2 reveals a significant percentage increase during Period 3 as compared to Period 2 (see Figure 2).

Hypothesis 3:

The effects of immediate CATTS feedback in increasing targeted teacher behavior is replicable among elementary school teachers.

In the present study hypothesis 3 gains support if Experimental Group 1 percentage increases in the three teacher categories - makes statement, gives positive reinforcement, and asks questions - are equal to the results obtained from Experimental Group 2, during Period 3; the replication effect. If the effects of CATTS are replicated, such evidence would strengthen the contention that teacher behavior change is causatively related to the CATTS intervention.

Support for H1 through H3 was suggested in several preservice teacher education feedback studies which stressed the importance of giving teachers immediate and specific information concerning the nature of their interactions (Hough & Amidon, 1967; Bell, 1968; Carlson, 1974; Goodkind, 1968). The CATTS format used in this study gave teachers feedback within 10 minutes of the observed teaching session even though the teachers were 200 miles away from the encoding station. Thus, CATTS allowed teachers to be aware of a change in their behaviors regarding low-status children. In essence, CATTS was seen as an amplification of feedback already in the interaction situation, that is, the children's responses and behavior during the session. Therefore, the amplification was intended to assist the classroom teachers in modifying their classroom behaviors toward rejected children.

Furthermore, it was predicted that E Group 1 teachers would increase their percentage of interactions to a greater extent than E Group 2 teachers on the basis of the results of prior studies using CATTS. VanEvery (1971) and Schmitt (1969) both found that practice over time facilitates skill acquisition. VanEvery (1971) found that therapist trainees who received CATTS feedback produced significantly more social reinforcement patterns and a higher therapist reinforcement/patient response ratio than trainees who received no CATTS feedback. Schmitt (1969) gave teacher trainees feedback on their use of broad questions. Those trainees who received CATTS feedback spent significantly more time using broad questions in the treatment phase as compared to the baseline phase. Weaver (1969) also provided teacher trainees with CATTS feedback on their use of student ideas. The trainees who received CATTS feedback did increase in mean gains from baseline to treatment phases.

The prediction of greater increase in interactions for E Group 1 as opposed to E Group 2 was also related to the fact that E Group 1 had twelve feedback printouts in contrast to the 7 feedback printouts received by E Group 2. Several studies have shown that the greater the number of feedback opportunities, the greater the chances that the desired behavior will occur (Amidon & Hoffman, 1965; Carlson, 1974; Dowd & Blocker, 1974; Heinrich & McKugan, 1969).

Further support for these hypotheses is found in the social status intervention studies which showed that rejected children, when encouraged by their teachers to participate in classroom activities, increased in the types of behaviors displayed by high-status children (Bonney, 1971; Brown & MacDougal, 1973; Retish, 1968; Taba & Elkins, 1950). Still more support is lent to these hypotheses from the social status change studies which indicate that, once teachers start to modify their classroom behaviors in a positive way towards rejected pupils, the classroom peer behavior changes as well (Anderson, 1946; Atkinson, 1949; Flanders & Havumaki, 1960; Kinney, 1953; Taba & Elkins, 1950).

Product variables: Sociometric posttest scores. Three weeks after the termination of the CATTS intervention, the same form of the sociometric instrument, "About Me and My Friends" (AMMF), was administered to all pupils in the 16 classrooms as a posttest. It was anticipated that, by the end of the study, the target pupils would no longer be the most rejected due to the change brought about in the classroom climate through the CATTS feedback to the teachers. It was expected that the teacher would be more positive towards the rejected pupils, i.e., give them more positive reinforcement and answer more of their questions. Therefore, it was predicted that, because of the teachers' behavioral changes, the peers in the classroom would respond to these target children more positively, as indicated by positive AMMF posttest scores.

Four hypotheses (H4 - H7) follow from the above reasoning:

Hypothesis 4:

Elementary school pupils who are initially rejected by their peers reveal significant positive changes in their sociometric status as a function of their teacher's receiving immediate CATTS feedback on three teacher categories: Makes statement, gives positive reinforcement, and asks questions.

Partial support for H4 is derived from the requirement of a significant increase in the sociometric status of rejected pupils from pre to posttesting.

Hypothesis 5:

Changes in targeted teacher behaviors significantly influence the change of sociometric status of rejected pupils in Experimental Group 1.

In the present study the percentage increase of teacher categories for Experimental Group 1 during Period 2 should reveal a significant influence on the posttest scores when controlled for pretest score influences. Such evidence would support the contention that sociometric change is directly related to the modification of teacher behaviors.

Hypothesis 6:

Changes in pupil targeted interaction categories significantly influence changes in the sociometric status of rejected pupils in Experimental Group 1.

Where H5 posits a direct influence of teacher process variables on sociometric status outcomes of pupils, H6 suggests that process changes among pupils have direct influence on changes in sociometric status of rejected pupils.

Hypothesis 7:

The relationships expressed in hypothesis 5 and hypothesis 6 are replicable.

The validity of H5 and H6 gains strength through a replication of the effects expected for both Experimental Groups 1 and 2.

The foundation for H5 through H7 is the research which indicates that the teacher is the most influential person in the classroom, and when his/her behavior becomes more positive towards low-status children over a period of time, peers in the classroom also start to interact more positively with low-status pupils.

The following chapter describes the subjects, materials and procedures which were used in testing the above hypotheses.

CHAPTER IV

METHODS

The methods designed for testing the hypotheses stated in the previous chapter are presented in this chapter.

Subjects

Teachers

Sixteen elementary school teachers in northwest Indiana volunteered to participate in the study. The age of the teachers ranged from 25 to 62, with a mean age of 36.5. The teachers had a mean of 12 years of teaching experience, and 14 had completed the master's degree in elementary education. A summary of the teachers' professional characteristics is presented in Table 1.

Pupils

Thirty-two children participated in this study. They had a mean chronological age of 9.5, with a SD = 3.18. The majority of the children were boys (n = 18). They tended to be low-average academic achievers for their grade levels, and 17 out of the 32 children were repeating the grade level in which they were enrolled. All of the children were Caucasian and were characteristically from large families with a mean of 6.5 family members. Table 2 contains a summary of the pupils' characteristics.

School

The school was situated in northwest Indiana in a suburban community with a shifting population of lower-class Caucasian families. Most of the children were white Anglo-Saxons from lower socioeconomic backgrounds. Racially different children were being bused into this community, and the ethnic makeup of the school was Anglo-American, Black-American, Puerto

Table 1

Characteristics of Teachers

TREATMENT CONDITION	TEACHER I.D. NO.	SEX	AGE	DEGREE	GRADE TAUGHT	YEARS EXPERIENCE
Experi #1	5-1	F	25	M.S.	Fifth	4
Experi #1	1-2	F	28	M.S.	First	7
Experi #2	1-4	F	26	M.S.	First	4
Experi #2	2-2	F	46	M.S.	Second	23
Experi #1	3-3	F	46	M.S.	Third	6
Experi #2	1-1	F	36	M.S.	First	14
Experi #1	1-3	F	40	M.S.	First	13
Experi #2	3-1	F	38	M.S.	Third	15
Experi #2	3-2	F	31	M.S.	Third	10
Experi #2	6-2	M	28	B.S.	Sixth	5
Experi #1	2-1	F	27	M.S.	Second	7
Experi #1	5-3	F	39	M.S.	Fifth	15
Experi #1	5-2	M	34	M.S.	Fifth	13
Experi #2	4-1	F	46	M.S.	Fourth	22
Experi #2	2-3	F	62	B.A.	Third	20
Experi #1	6-1	F	38	M.S.	Sixth	14

Table 2

Characteristics of Rejected Children

	Classroom	Grade	Sex	Academic Achievement	Repeat (grade)	I.Q. (Lorge-Thorndike)	Family Size	Parents' Marital Status	Physical Disabilities	Chronological Age
1	1-1	1	M	A	N	NA	6	D	N	6.6
2	1-1	1	M	A	Y	NA	4	M	N	7.7
3	1-2	1	M	A	Y	NA	7	M	N	7.5
4	1-2	1	M	A	N	NA	3	M	N	6.7
5	1-3	1	F	A	N	NA	3	M	Y	7.3
6	1-3	1	M	A	N	NA	10	M	N	6.10
7	1-4	1	M	BA	Y	NA	6	M	Y	8.0
8	1-4	1	F	A	N	NA	6	M	N	6.7
9	2-1	2	F	A	Y	87	7	M	N	8.0
10	2-1	2	M	A	Y	112	3	M	N	8.5
11	2-2	2	F	A	N	104	11	M	N	8.11
12	2-2	2	M	A	N	111	5	M	N	8.0
13	2-3	2	M	BA	Y	81	8	M	N	8.7
14	2-3	2	F	BA	N	92	9	M	N	7.11
15	2-3	3	F	A	Y	108	11	M	N	10.6
16	3-1	3	M	BA	Y	93	4	M	Y	9.9
17	3-1	3	F	A	N	93	4	M	N	9.3
18	3-2	3	M	A	N	101	6	M	N	9.3
19	3-3	3	M	BA	N	NA	4	M	N	8.11
20	3-3	3	M	A	Y	110	8	M	N	8.5
21	4-1	4	M	A	N	98	6	M	N	9.9
22	4-1	4	F	A	N	129	5	M	N	10.0
23	5-1	5	F	A	Y	101	4	M	N	11.11
24	5-1	5	F	A	Y	90	6	M	N	12.0
25	5-2	5	M	A	N	101	4	M	Y	11.4
26	5-2	5	M	A	Y	76	4	M	Y	13.0
27	5-3	5	M	BA	Y	101	7	M	Y	11.0
28	5-3	5	F	BA	Y	66	6	D	N	12.3
29	6-1	6	F	A	N	116	8	D	N	12.1
30	6-1	6	F	A	Y	97	7	M	N	13.2
31	6-2	6	F	A	Y	79	7	M	N	13.5
32	6-2	6	M	A	Y	85	9	D	N	15.2

KEY

A = Average
BA = Below Average
D = Divorced
M = Married

NA = Not Available
Y = Yes
N = No

Rican-American, and Mexican-American.

Instruments

Observation Instrument

An interaction analysis system, containing seven categories and subscripted to indicate who was the initiator of the behavior, was used in this study. The categories of the system were: asks questions, calls on, answers question, raises hand, makes statement, positive feedback, and no response (see Appendix B for a more detailed description). This system was developed to discriminate cognitive behaviors occurring in the classroom. The observation instrument, the Indiana Interaction Index (III), was adapted from a system developed by Semmel and Myers (1971) called the Indiana Pupil Participation Index. The III monitors pupil-teacher and pupil-pupil cognitive behaviors occurring in the classroom (see Appendix B).

This particular observation instrument allowed the researcher to focus on patterns of behavior occurring in the classroom as well as the frequency of specific categories.

Training of Observers

Six housewives from the community were selected to be trained as observers. All six observers had a high school education, and one had a B.S. in education. The age range of the coders was from 26 to 45, with a mean of 34 years. None of the housewives had prior experience with observation tools.

The training period was a 40-hour week. On the first day, the trainees were asked to define and analyze each category in the III. A number was then associated with each category. The trainees were evaluated continuously as they roleplayed and coded written classroom dialogue.

Both videotapes and audiotapes were used in the training sessions of the observers. The videotapes of simulated classrooms stressed the cognitive aspect of classroom behaviors. The initial videotapes contained short, one-minute classroom segments. As the trainees' coder criterion rose, the audiotape segments became more complex in nature, shifting to three-minute segments. In the last phase of training, observers used 10-15-minute videotapes which required continuous coding in order to approximate "real" classroom behavior.

On the fifth day, the observers were given a criterion test on the use of the III categories. Criterion reliability and intra-coder reliability were assessed. The five observers having the highest criterion reliability were chosen as coders, and the sixth person was selected to be the substitute coder. The observers had a mean score of .90 on criterion reliability tests and .93 on intra-coder reliability tests at the start of the study.

The hypotheses investigated in this study were dependent on the accuracy of observer coding abilities. Therefore, throughout the study there were maintenance reliability checks made on observers' coding skills. Maintenance checks were held every 10 days, and the coders maintained the .90 and .93 reliabilities. The purpose of the observer maintenance check was to see whether or not the observers had sustained their observer accuracy on the III observation instrument throughout the study.

Observation Sessions

Observation periods were 20 minutes in length, and each teacher was observed 18 times during the study. Observers were situated in the classroom, permitting an optimal view of classroom activity. The trained observer walked into the room carrying a TOUCH-TONE telephone with a 25-foot extension cord. The observer connected it to a phone jack in the room, dialed the computer hookup in Bloomington, and proceeded to code classroom behavior. Each observer was instructed to primarily track Target 1 and Target 2 children in the classroom and, secondly, to track all other children in the classroom.

Two observers coded daily and, in order to reduce the fatigue factor and assure reliable data, observers coded only one 20-minute session per hour. In addition, observers were randomly assigned classrooms in order to avoid a coder bias factor.

Procedure

Phase 1 - Sociometric Pretesting

Because children in the lower grades could not read fluently and because a uniform procedure was needed, a sociometric instrument which did not require any reading skills was used. The instrument, "About Me and My Friends," was administered during the first week of the study. To insure relative consistency and a high degree of rapport, the classroom teachers were asked to administer the sociometric measure. The teachers were given an instruction sheet which gave specific directions on how to administer the sociometric instrument (see Appendix C).

To administer this instrument, the teacher put the name of a child on the blackboard. The children were instructed to copy the name and mark one of the four faces next to the name. The children were told that a face with a question mark meant that s/he didn't know the child well enough to tell how s/he felt about this particular child. The happy face selection indicated complete acceptance of the child in question. The face with no expression indicated that s/he did not care about the child or was ambivalent. The unhappy faces indicated rejection; s/he disliked the child in question.

The names of the children were placed on the board until all children in the classroom had been listed. The instrument also required that each child rate himself/herself in terms of the four face choices, thus giving a measure of self-concept. The sociometric instrument took about 20 minutes to administer in all grade levels.

In order to have a numerical weighting, the faces were given these values: a happy face = 2 points; a question mark = 1 point; rejection = -1 point; and ambivalence = 0 points. The sociometric instruments were scored and ranked to determine who were the two lowest-scoring children in each classroom. The two children nominated as the most rejected by their peers were the target pupils in the study.

All children in the school were assigned a number so that the observers could track the two target or rejected children in the baseline phase of the study. The numbers also assured that the teachers would not know who the target children were.

Phase 2 - Collecting Baseline Observations (O_1-O_6)

During the baseline period, the first five sessions of the study (O_1-O_5), observers monitored the behavior of teachers and peers toward the rejected children. After the completion of the fifth observation, the teachers were ranked from high to low on their cognitive interactions with the target children. A high ranking was given to the teachers if they had a high frequency of interactions with the target children, and a low ranking was given if they had minimal interactions with the target children. To insure equality of interaction status within the teacher Experimental Group 1 and Experimental Group 2, teachers were placed into eight high-low ranking pairs. A table of random numbers was used to cast the high-low pairs into two groups. Four pairs became E Group 1 and the other four pairs composed E Group 2.

Phase 3 - Group 1 Receives CATTS Feedback

Before receiving CATTS feedback, all of the teachers in E Group 1 were brought together and given a module on how to read and interpret the computer printout (see Appendix E). During this meeting, teachers were told that two children in their classroom had been rated by their peers as the least liked. The researcher asked the teachers to try to change their behavior in a positive fashion towards the rejected children in their classrooms in hopes of changing the peers' attitude from rejection to acceptance of the rejected children. Teachers were instructed as to how this change could be achieved.

Teachers were asked to emphasize three social facilitator skills when interacting with the target pupils: (1) ask more questions; (2) call on the target pupils by name; and (3) answer the target pupils' questions and positively reinforce their appropriate behaviors. The teachers were also informed that for the next 12 observation sessions they would be receiving CATTS post-session feedback in the form of a computer printout. In addition, teachers were given a module designed to facilitate their understanding of the CATTS feedback. The module contained a copy of the computer printout as well as a discussion of each feedback heading. It was explained to the teachers that the feedback categories were based on the Indiana Interaction Index (III) observation instrument, and category names and definitions were stressed.

Following the morning meeting, those teachers in group one began to receive CATTS post-session feedback for the next five sessions (OX_7-OX_{11}). In contrast, group two teachers did not receive the CATTS feedback and continued with five additional baseline observations (O_7-O_{11}).

CATTS data phone. In this study feedback on teaching behaviors was augmented by the use of a Computer-Assisted Teacher Training System (CATTS). CATTS is described by Semmel (1974) as a closed-looped feedback system based on a cybernetic model. The specific CATTS configuration is divided into four stations: (1) the Teaching Station, (2) the Observation-Coding Station, (3) the Analysis-Encoding Station, and (4) the Telecopier Station (see Figure 3).

Teaching Station. Station I for this study was located in 16 classrooms in an elementary school in northwest Indiana. A teacher and class of approximately 29 children comprised each Teaching Station.

Observation-Coding Station. The Observation-Coding Station was also located in the classroom in this configuration. A trained observer in the classroom coded classroom behaviors for 20-minute periods approximately four times a week on a TOUCH-TONE telephone. This telephone was connected by long-distance hookup to a computer in Bloomington, Indiana, 200 miles away.

Analysis-Encoding Station. This station was located in the Teacher Education Laboratory (TEL) at the Center for Innovation in Teaching the Handicapped in Bloomington, Indiana, where a small PDP-12 computer was programmed to receive data through a data phone installation. The computer was programmed to process and analyze data. The incoming data signals were stored and analyzed within micro-seconds. The computer then transmitted, on a standard teletype, a hardcopy summary of the analyzed data. This summary was then transmitted via a Xerox telecopier to the receiver telecopier in the school 200 miles away.

Telecopier Station. All of the feedback on the teacher's classroom behavior was transmitted to the Telecopier Station located in an office in the school principal's suite. This station consisted primarily of the

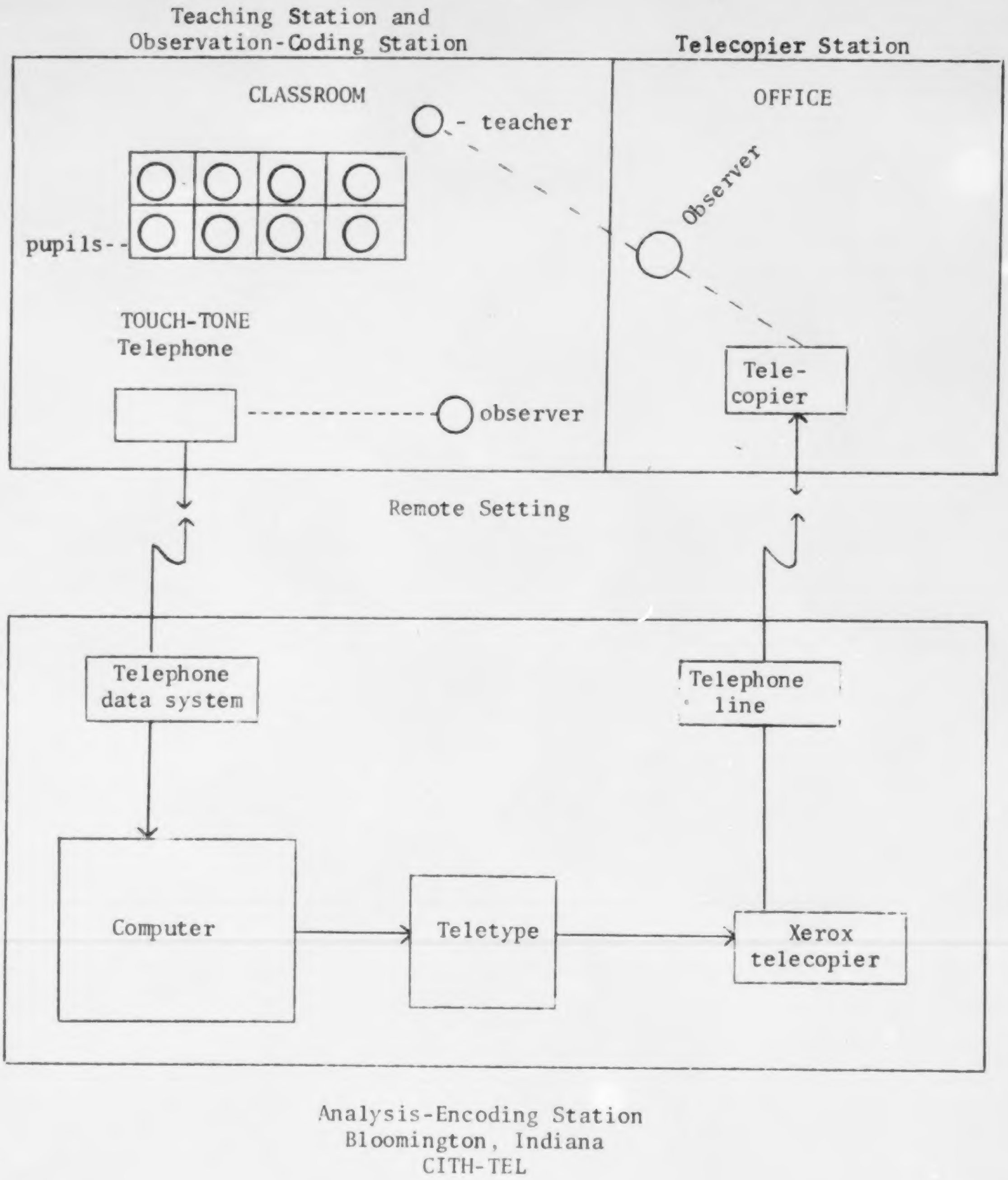

Teaching Station and
Observation-Coding Station
Telecopier Station
CLASSROOM
teacher
pupils
TOUCH-TONE
Telephone
observer
OFFICE
Observer
Tele-
copier
Remote Setting
Telephone
data system
Telephone
line
Computer
Teletype
Xerox
telecopier
Analysis-Encoding Station
Bloomington, Indiana
CITH-TEL

Figure 3. CATTS Data Phone Configuration

Xerox telecopier and telephone computer. The telecopier read the signals transmitted over long-distance telephone lines and transformed them into a printed summary printout. Thus, long-distance telephone lines were used to input as well as output data in this study, allowing teachers to receive summary feedback on their classroom behaviors within 10 minutes after the end of the observed teaching session.

Phase 4 - Experimental Groups 1 and 2 Receive Feedback (OX_{12}-OX_{18})

During observations 12 through 18, all teachers received feedback. It was during this period that E Group 2 initially received post-session feedback in the form of a computer printout. Before the twelfth session was observed, the teachers (N = 8) were called to a meeting and told about the tracking of two rejected children in their classrooms. They also were informed that they would be receiving feedback through a computer printout. Teachers in E Group 2 received the exact instructions concerning feedback that teachers in E Group 1 received. Hence, with completion of the eighteenth observation, the E Group 1 teachers had 6 baseline observations and twelve treatment observations, and E Group 2 teachers had eleven observations of baseline and seven of treatment (post-session feedback).

Feedback format. CATTS post-session feedback was transmitted via the CATTS data phone system over a Xerox telecopier. The telecopier read the signals transmitted through the telephone receiver and transcribed them into graphic formats.

The computer printout format was simple and readable, facilitating the teacher's understanding of the feedback. The data on the printout initially consisted of identification information. The first indicator was the teacher identifying number. The first digit identified the grade level and the second digit identified the class number (1-1 to 6-2; see Figure 4). The second and third set of indicators were the identification numbers of the target children (0-500). The fourth indicator was the coder identification number (01-04). The fifth and sixth indicators gave the date and time of the observation period. All identifying information was sent on-line by the observers to the data center, as were the following categories of data on the computer printout (see Figure 4).

The heading Interactions on the printout was the indicator of the source and frequency of cognitive interactions which took place in the observed classrooms. The sources were either (1) teacher to Target 1, (2) teacher to Target 2, (3) teachers to others, (4) pupils to Target 1, and (5) pupils to Target 2. The frequency totals followed the source indicators. This data summary gave the teacher a breakdown of classroom interactions with the target pupils by source and frequency of occurrence.

The following heading on the printout, Category Summary, was the listing of the seven categories of the Indiana Interaction Index (III), the observation instrument, with frequency totals for each category. The categories of the observation instrument (III) were: (1) asks question; (2) calls on; (3) answers; (4) hands up; (5) statement; (6) positive feedback; and (7) no response. This heading also gave the source of interactors with target pupils: (1) teacher; (2) Target 1; (3) Target 2; and (4) others. The rationale for including this type of summary was to give the classroom teacher an opportunity to analyze his/her classroom behavior in terms of very specific behavior categories. It gave the teacher an indication of how s/he was interacting with the rejected children (e.g., a high frequency of no responses or a low frequency of positive reinforcement). Hence, the teacher could look at his/her behavior and try to make

```
                 CLASSROOM/PARTICIPATION INDEX

                        TEACHER:  1-1
                       TARGET 1:  217
                       TARGET 2:  211
                         CODER :   01
                          DATE :  4/30/74
                          TIME :  10:00

                          INTERACTIONS

                    SOURCE        FREQUENCY

             TEACHER TO TARGET 1    19
             TEACHER TO TARGET 2    18
             TEACHER TO OTHERS      65
              PUPILS TO TARGET 1    14
              PUPILS TO TARGET 2    13

            PARTICIPATION CATEGORY SUMMARY (FREQ)

      CATEGORY      TEACHER  TARGET 1  TARGET 2  OTHERS

      ASK ?'S          66         0         0       4
      CALLS ON         31         0         0       0
      ANSWERS ?         4        19        17      39
      HANDS UP          0        14        14      29
      STATEMENT        45         0         0       2
      POSITIVE FB      41         0         0       0
      NO RESPONSE       0         0         0       0

      TOTAL           187        33        31      75

                     PARTICIPATION INDEX
                     (% OF TOTAL CODES)

                     TARGET 1       10%
                     TARGET 2        9%
                     OTHERS         23%
```

Figure 4. Feedback Format.

positive changes for the next day. The CATTS feedback was expected to be effective because it was immediate (10-minute turn-around time) and behaviorally specific.

The last heading, Participation Index, was included to give the teacher a breakdown of the percentage of total classroom interactions. The sources of teacher interactions were: (1) Target 1, (2) Target 2, and (3) Others.

Phase 5 - Sociometric Posttesting

Three weeks after post-session feedback had been terminated, posttesting of social status took place. The exact procedures used in the pretest were replicated during the posttest phase.

Phase 6 - Data Analysis

The design. The data analysis was based on the following experimental design:

Period 1	R		Period 2	Period 3
		Exp. Group 1 (n=8)	$OX_7OX_8OX_9OX_{10}OX_{11}$	$OX_{12}OX_{13}OX_{14}OX_{15}OX_{16}OX_{17}OX_{18}$
$O_1O_2O_3O_4O_5O_6$				
		Exp. Group 2 (n=8)	$O_7O_8O_9O_{10}O_{11}$	$OX_{12}OX_{13}OX_{14}OX_{15}OX_{16}OX_{17}OX_{18}$

Where R = Random assignment of subjects (pairs)

O = No Feedback Observation

OX = Feedback Observation

	Period 1	Period 2	Period 3
Exp. Group 1	Baseline = O_1-O_6	Treatment OX_7-OX_{11}	Treatment OX_{12}-OX_{18}
Exp. Group 2	Baseline = O_1-O_6	Baseline O_7-O_{11}	Treatment OX_{12}-OX_{18}

Percent increase. These data were analyzed using percentage increase as a dependent variable in which individual differences between subjects were removed. This was done through a conversion of the mean score during Period 2 for each subject as a percent increase over mean Period 1 score, $S'_{i2} = S_{i2} = \frac{S_{i1} - S_{i1}}{S_{i2}} \times 100$, where i is the ith subject, and S_{i1} and S_{i2} refer to the mean scores for Period 1 and Period 2 for the ith subject. The term S'_{i2} is then the percentage increase in Period 2 over Period 1. Similar scores were computed for Period 3 as percentage increase over Period 2. Thus there were only 2 periods which were analyzed, Period 2 or $S'_{i2} = \frac{S_{i2} - S_{i1}}{S_{i1}} \times 100$, and Period 3 or $S_{i3} = \frac{S_{i3} - S_{i2}}{S_{i2}} \times 100$. The percentage improvement over previous period measures was used, based on the theoretical position that the group dynamics of a classroom is relatively stable.

Teacher as the change agent. The intervention resides with the teachers because the teachers increase their participation with the target children. This results in increased participations by targets 1 and 2. By correlating percentage improvement scores of teachers (for example, G1, P2 and G2, P3) with target 1 percentage improvement scores (on the teacher and pupil constructs) the effect of teacher's behavior on target 1 behavior can be clearly shown. Similar correlations can be performed with teacher and target 2 variables. This relationship is shown in Figure 5, as indicated by the arrow leading from teacher variables to target variables.

Relating input-process-product. The last stage of the analysis was to relate output to input and process. The relationship for any target

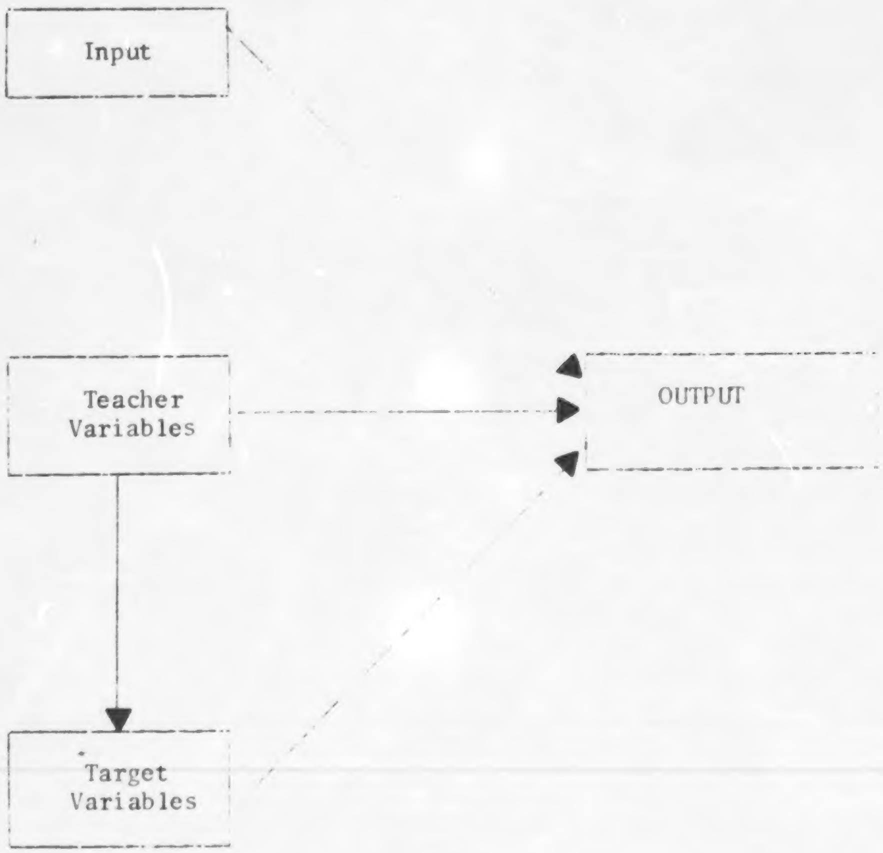

Input
Teacher Variables
OUTPUT
Target Variables

Figure 5. Relating input and process variables to product variables.

child can be expressed as: Output = (Input, teacher variables, target variables), where input and output are target scores on ATMF pretest and posttest respectively. A stepwise multiple regression analysis was performed on the above function, with the order of inclusion in three stages as specified above. The SS_{reg} due to input shows the proportion of output explained by input. The increase in SS_{reg} due to teacher variables shows the contribution by the teachers' change of classroom dynamics. The increase in SS_{reg} due to target variables shows the contribution of targets themselves over and above that of the teachers' contribution. The model is as shown in Figure 5.

The input (target's pretest scores) and the teachers' interaction with targets are assumed to have been stabilized during the baseline trials. Each teacher adjusts his/her interaction with these rejected children, depending upon their own judgments about these children. The rejected children also interact with the teacher to the extent that they feel comfortable. Since teacher and target variables are being measured as percentage improvement over a baseline, the input will not affect the process.

The teachers in Group 1 and Group 2 are both "Experimental" Groups, and Group 2 results are considered as a "replication" of the Group 1 results. To consider the replication effect, the number of treatment trials in both groups must be the same. Hence, Group 1, Period 3 and Group 2, Period 3 improvements were used in the above stepwise regressions with 16 target children (2 x 8 classrooms) as the unit of analysis.

The next chapter presents the results of the study.

CHAPTER V

RESULTS

This chapter presents the analysis of the data collected through the procedures outlined in Chapter IV. The results illustrate how the input and process variables have affected the product variables (see Figure 5). The input variables were defined as the pretest scores, the process variables were defined as the classroom interactions as affected by the CATTS intervention, and the product variables were defined as the posttest scores. The dependent variables in this study were the posttest scores and the independent variables were the pretest scores and the classroom interactions as they were affected by the CATTS intervention. These data were analyzed by a stepwise multiple regression analysis and a percentage increase model.

Product Variables

Hypothesis 4. H4 implied that there would be an increase from pre to posttesting on the sociometric scores. It was expected that there would be a change in class dynamics or interactions which would ultimately bring about a significant increase in the posttest scores of the rejected children. This was hypothesized because the CATTS intervention was expected to have an impact on the teacher behavior, that is, change the frequency and style of interactions with low-status children. Table 3 shows the pre and posttest scores of the target (rejected) students. A sign test was used to analyze these data. The results on Table 1 reveal that changes from pre to posttesting were significant at the .002 level (P = .002, + = 25, - = 5, 0 = 2). Thus, hypothesis 4 was supported.

Table 3

Sign Test on AMMF Pre to Post Scores for Targets

Subjects	Pre	Post	Sign
1	-2	+7	+
2	2	12	+
3	11	29	+
4	3	15	+
5	0	2	+
6	8	-11	-
7	5	5	0
8	7	7	0
9	12	26	+
10	2	30	+
11	8	15	+
12	7	- 2	-
13	1	29	+
14	7	22	+
15	9	34	+
16	9	39	+
17	8	14	+
18	-7	- 1	+
19	22	32	+
20	22	21	-
21	16	42	+
22	12	18	+
23	11	18	+
24	9	21	+
25	8	23	+
26	14	20	+
27	5	14	+
28	5	21	+
29	11	- 5	-
30	7	- 3	-
31	-4	9	+
32	-13	- 4	+

+ = 25

- = 5

0 = 2

$P < .002$

Hypotheses 5 and 6. H5 and H6 predicted that teacher and target categories would significantly contribute to the change in posttesting of sociometric scores of Experimental Group 1. The summary table of stepwise regression for the 16 target children in Experimental Group 1, with AMMF posttest as the dependent variable, is shown in Table 4. The order of inclusion of variables was specified as AMMF pretest, teacher categories, and target categories, respectively. Within the teachers or target categories, the order of inclusion was automatically selected by the program, based on the magnitude of partial-r holding all previous variables constant. The overall F was significant at $\partial < .05$ up to step 6, and at step 7 the ∂ level was .084. The variance in AMMF posttest was contributed by:

1. AMMF pretest = 6.680%
2. Teacher categories = 54.233%
3. Target categories = 10.380%

Total contribution = 71.293%

It is clear that the contribution of the teacher categories and target categories to the AMMF posttest variance was significantly higher than the contribution of AMMF pretest scores. Out of 64.613% of variance contributed by teacher and target categories, 83.93% (54.233/64.613) was contributed by the teacher categories. Since the treatment was the intervention through the teachers, this 83.93% can be considered as the efficiency of treatment. The overall efficiency (direct and indirect effects) of the treatment was 90.63% (64.613/71.293).

Disregarding the slight increase in ∂ (.084) in the last step, hypotheses 5 and 6 can be considered to have been supported by the overall F test.

Table 4

Multiple Regression Summary Table for Experimental Group 1 on the Dependent Variable Posttest Scores

Step	Multiple	R Square	R Square Change	Overall F	Significance
1. AMMF Pretest	.25846	.06680	.06680	1.00219	.334
2. Teacher Positive Feedback	.56534	.31961	.25280	3.05328	.082
3. Teacher Makes Statements	.77915	.60707	.28747	6.18002	.009
4. Teacher Asks Questions, Calls On	.78047	.60913	.00206	4.28562	.025
5. Target Asks Questions	.83049	.68971	.08057	4.44551	.022
6. Target Raises Hand	.84203	.70901	.01930	3.65476	.040
7. Target Answers Questions	.84435	.71294	.00393	2.83833	.084

Hypothesis 7. H7 stated that there would be a replication effect for Experimental Group 2 which would show that target and teacher categories significantly contributed to the change in posttest scores. The summary table for Experimental Group 2 is shown in Table 5. It can be seen that the order of inclusion of target variables was slightly different; targets asking questions was entered last. The overall F test was highly significant. The various percentages for Experimental Group 2 are as below:

1. AMMF pretest = 46.960%
2. Teacher categories = 25.687%
3. Target categories = 8.850%

Total contribution = 81.506%

The improvement in prediction due to treatment (direct and indirect) was 34.546% (25.687 + 8.859), and the relative contribution of treatment to the variance accounted for by the above three was 42.385% (34.546/81.506).

While the percentages and multiple R^2 of Group 2 were not the same as Group 1, the general effect of teacher categories and target categories contributing to the variance of AMMF posttest scores seem to be replicated.

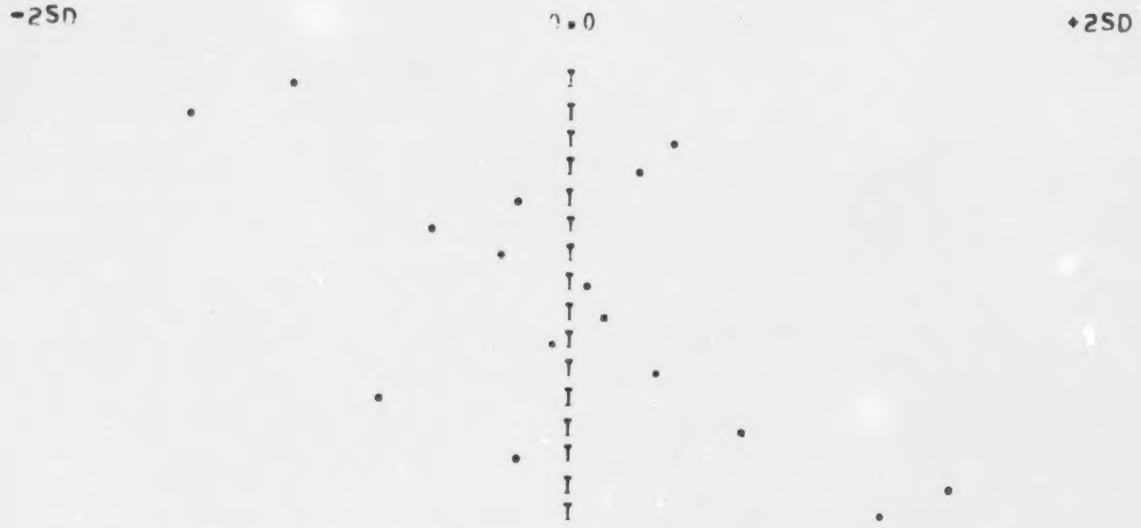
The next question to be considered is whether there were any factors other than the above three factors which were systematically affecting the posttest scores. The inspection of residuals (Y-y) for both Group 1 and Group 2 for the 16 subjects in each group reveals no systematic bias in residuals. The number of positive and negative residuals were 8 each for Group 1, whereas for Group 2 there were 9 positive residuals and 7 negative residuals. There were no outliers of more than 2 SD within Experimental Group 1 and Experimental Group 2 (see Figure 6).

Table 5

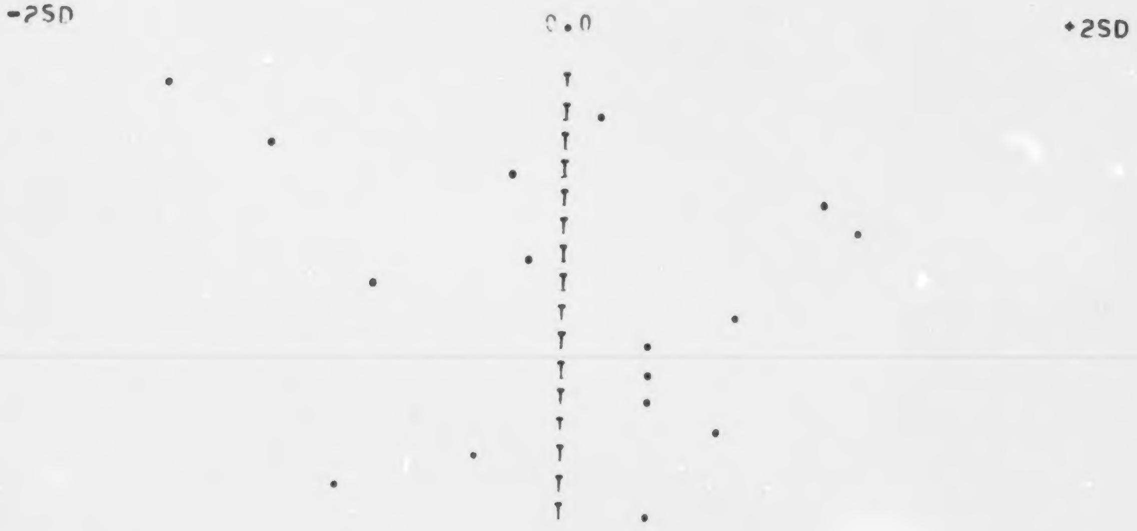
Multiple Regression Summary Table for Group 2

on the Dependent Variable Posttest Scores

Step	Multiple	R Square	R Square Change	Overall F	Significance
1. AMMF Pretest	.68527	.46960	.46960	12.39501	.003
2. Teacher Positive Feedback	.79229	.62772	.15812	10.96003	.002
3. Teacher Makes Statements	.83579	.69855	.07083	9.26916	.002
4. Teacher Asks Questions, Calls On	.85233	.72647	.02792	7.30365	.004
5. Target Raises Hand	.90150	.81270	.08624	8.67832	.002
6. Target Answers Questions	.90235	.81423	.00153	6.57461	.007
7. Target Asks Questions	.90280	.81505	.00082	5.03634	.018



Experimental Group 1



Experimental Group 2

Figure 6. Residuals (Y-y) for Group 1 and Group 2.

Process Variables

CATTS Feedback as an Instrument of Change

Hypothesis 1. H1 predicted that Experimental Group 1, Period 2 would have more classroom interactions than Experimental Group 2, Period 2. This was predicted because the CATTS intervention would cause the teacher and target children to interact more often as a result of the systematic feedback. The percentage of improvements for phases 1 and 2 are presented in Table 6. The six categories of behaviors focused on in the study are included in the table. Data in Table 6 indicate that Experimental Group 1 during Period 2 had higher gains in percentage increases than Experimental Group 2 during the same period. It can be seen by these data that the teachers and targets in E G1, P2 did increase their interactions significantly and Hypothesis 1 is supported.

Hypothesis 2. H2 predicted that E G2, P3 > E G2, P2; that is to say, that there would be a difference between the period in which CATTS feedback was instituted and the period in which Experimental Group 2 did not have the feedback opportunities.

Table 7 shows the percentage increase scores for Experimental Group 2, Periods 2 and 3. These data reveal that E G2, P3 > E G2, P2 in percentage increases. In the teacher categories there were significant increases from P2 to P3. These data support Hypothesis 2.

Hypothesis 3. H3 stated that there would be a replication effect, E G2, P3 = E G1, P2. Table 8 contains a summary which shows the replication of E G1, P2, and E G2, P3 (the period when both groups were receiving CATTS feedback). The data show that in the teacher categories the CATTS feedback effect was replicated because the percent increase was very similar: Teacher makes statement E G1, P2 = 60, E G2, P3 = 65.11; Teacher gives

Table 6

Summary Table of Percentage Increases

for E Group 1 & 2 for Phase 2

	Exp. Group 1 Period 2 (2/1) $\bar{X}$	S.D.	Exp. Group 2 Period 2 (2/1) $\bar{X}$	S.D.
Teacher Makes Statement	60.66%	48.02%	21.57%	38.89%
Teacher Positive Feedback	47.43	63.70	6.29	49.74
Teacher Asks Questions	26.88	33.78	20.72	38.12
Targets Ask Questions	133.61	193.21	-45.00	87.95
Target Raises Hand	113.55	96.40	79.83	192.02
Target Answers Questions	157.44	190.27	112.19	143.08

Table 7

Summary Table of Percentage

Increases for E Group 2

	Exp. Group 2 Period 2 $\bar{X}$	S.D.	Exp. Group 2 Period 3 $\bar{X}$	S.D.
Teacher Makes Statement	21.57%	38.89%	65.41%	33.74%
Teacher Positive Feedback	6.29	49.74	99.69	63.17
Teacher Asks Question	20.72	38.12	40.82	43.78
Targets Ask Question	-45.00	87.95	78.80	90.64
Target Raise Hands	79.83	192.02	388.93	394.80
Target Answers Questions	112.19	143.08	206.27	289.34

Table 8

Summary Table of Percentage Increases for

E Group 1 & 2, Contrasting Period 2 & 3

	Group 1 Period 2 $\bar{X}$	S.D.	Group 2 Period 3 $\bar{X}$	S.D.
Teacher Makes Statement	60.66%	48.02%	65.41%	33.94%
Teacher Gives Positive Feedback	47.43	63.70	99.69	63.17
Teacher Asks Questions	26.88	33.78	40.82	43.78
Targets Ask Question	133.61	193.21	78.80	90.64
Targets Raise Hand	113.55	96.40	388.93	398.80
Targets Answer Questions	157.44	190.27	206.27	286.34

positive feedback G1, P2 = 47.43, G2, P3 = 97.69; Teacher asks questions 26.88 = 40.82. In the target categories increases were very similar for both groups: Target asks question E G1, P2 = 133.61%, E G2, P3 = 78.80; Target raises hand E G1, P2 = 113.55, E G2, P3 = 388.93; Target answers questions E G1, P2 = 157.44, E G2, P3 = 206.27. In summary, these data support Hypothesis 3.

The results of the data analyses indicated that it is possible to improve the low social status of rejected children. The data also disclosed that the CATTS intervention did contribute to changes in classroom interactions. But more importantly, the results revealed that the teacher behaviors or classroom interactions were the most significant factor contributing to posttest score gains. Table 9 presents a succinct summary of the results presented in this chapter.

Discussion

Hypothesis 4 predicted that there would be an increase from pre to posttesting on the sociometric scores. The results showed that pre to posting scores significantly changed. This finding was also supported by several other studies in which an intervention was instituted to increase social status (Atkinson, 1949; Chaires, 1966; Kranzler, Mayer, Dyer, & Munger, 1966). Atkinson (1949) used the teacher as the prime intervention agent in changing social status in the classroom. He placed rejectees and high-status students in work groups and had the teacher encourage rejectee participation. Atkinson found that rejectees increased in social status. The present investigation incorporated one of Atkinson's intervention strategies by encouraging teacher participation with rejectees. This was facilitated through the CATTS data phone intervention. As the pre to posttest results indicate, it was not by chance that the classroom dynamics

Table 9

Summary of Results

Hypothesis	Analysis	Support from Results	In Predicted Direction
CATTS Feedback as an Instrument of Change			
H:1 Teachers receiving relatively immediate CATTS feedback about specific interactions with rejected pupils reveal significantly higher percentage increases in three teacher categories (Makes statement, gives positive reinforcement, and asks questions) when compared to teachers who do not receive such feedback.	ANOVA not performed as variance within group is more than variance between groups. Used percent increase model.	Mean of Group 1 increase in Period 2 over Period 1 is more than that of Group 2 on all 3 teacher and target variables.	Yes
H:2 Teachers who receive immediate CATTS feedback following a period of baseline observations reveal a significant percentage increase in the three teacher categories: Makes statement, gives positive reinforcement, and asks questions.		Mean of Group 1, Period 3 increase over Group 1, Period 2 is more than that of Group 1, Period 2 over Group 1, Period 1 on all 3 teacher and target variables.	Yes
H:3 The effects of immediate CATTS feedback in increasing targeted teacher behavior is replicable among elementary school teachers.		Mean of Group 2, Period 2 increase over Group 2, Period 3 is more than Group 2, Period 2 over Group 2, Period 1 showing effect of CATTS intervention, and are comparable to Group 1, Period 2 over Group 1, Period 1 (replication).	Yes

Table 9

Summary of Results (continued)

Hypothesis		Analysis	Support from Results	In Predicted Direction
Process Variables Directly Affect the Product Variables				
H:4	Elementary school pupils who are initially rejected by their peers reveal significant positive changes in their sociometric status as a function of their teacher's receiving immediate CATTS feedback on three teacher categories: Makes statement, gives positive reinforcement, and asks questions.	Sign test on AMMF pre to post scores.	+ = 25 - = 5 = 2 $p <$ .002	Yes
H:5	Changes in targeted teacher behaviors significantly influence the change of sociometric status of rejected pupils in Experimental Group 1.	Stepwise multiple regression.	54.233% of AMMF post-test accounted for overall F sig. < .025.	Yes
H:6	Changes in pupil targeted interaction categories significantly influence changes in the sociometric status of rejected pupils in Experimental Group 1.	Stepwise multiple regression.	10.38% AMMF post-test accounted for overall F sig. < .084.	Yes

Table 9

Summary of Results (continued)

Hypothesis	Analysis	Support from Results	In Predicted Direction
Process Variables Directly Affect the Product Variables			
H:7 The relationships expressed in hypothesis 5 and hypothesis 6 are replicable.	Stepwise multiple regression.	25.687% (teacher categories) of AMMF posttest accounted for all over F sig. < .004. 8.85% (target categories) AMMF posttest accounted for overall F sig. < .018.	Yes

and posttest scores changed in a positive direction. It is suggested that, through the institution of the CATTS feedback, teachers and targets began to interact more positively with each other.

Pre to posttesting scores indicate that teacher-student interactions increased, i.e., most of the rejectees' posttest scores changed in the positive direction. Twenty-five rejectees increased in social status; two made no change; and only five regressed in sociometric status. The change in classroom interactions from pre to posttesting periods should be emphasized. At the beginning of the study the target children were the most rejected. In the intervening period some phenomena occurred which caused the posttest scores and social status to change significantly. Results indicate that CATTS feedback whcih the teachers received daily on their classroom interactions was instrumental in the change.

Hypotheses 5, 6, and 7 were concerned with the impact of the process variables on the product variable. A stepwise multiple regression was applied to these data and all 3 hypotheses were supported. These data indicate that there was a direct relationship between the increase in rejectee and teacher interactions and the increase in rejectee posttest sociometric scores. For Experimental Group 1, 54% of the variance in the posttest scores was attributed to teacher interaction categories, 10.380% to the target categories, and 6.68% to the pretest score. Out of the 65% of variance contributed by teacher and target categories, 84% was contributed by the teacher categories.

For Experimental Group 2, 26% of the variance in posttest scores was attributed to teacher categories, 86% to target categories. Out of the 35% of variance contributed by teacher and target categories, 71% was contributed by the teacher category. Therefore, there was a partial replication of the effects predicted by hypothesis 7. The total teacher and target variance contributions (35%) for Experimental Group 2 were not as high for Experimental Group 1 (65%), but this may be due to classroom composition differences and a residual effect of the CATTS feedback. Nonetheless, in both experimental groups the teacher categories contributed significantly to change in pupil posttest sociometric scores. Therefore, the teacher classroom interactions were influential in determining posttest score changes.

Teachers in the present study reported that they saw changes in the target pupils' classroom behavior, especially in the academic and social areas. Many teachers felt that the target students gained in reading skills and seemed to increase their overall school achievement. Other teachers reported that the targets were more popular in playground games and seemed not to fight as frequently.

In summary, these results suggest that the process variables - classroom interactions affected by the CATTS intervention - are directly related to positive sociometric changes among low-status children.

CATTS Feedback as an Instrument of Change

Teachers in both experimental groups received immediate post-session feedback via the CATTS data phone configuration. But teachers in Experimental Group 1 received 12 teacher feedback opportunities, while teachers in Experimental Group 2 received only seven. Furthermore, the CATTS feedback intervention was instituted during Period 2 (P2) for teachers in Experimental Group 1 and during Period 3 (P3) for teachers in Experimental Group 2 (see Figure 2). Therefore, it was predicted in hypothesis 1 that Experimental Group 1, Period 2 would increase significantly over Experimental Group 2, Period 2 in all six interaction categories. The results supported this hypothesis, indicating that, when the feedback was instituted, the frequency of the teacher interactions with the target children increased.

Table 8 also shows that the teachers increased in the categories which would have most impact on improving low social status of a rejected child. Teachers in Experimental Group 2, Period 2 increased 47% in giving *praise*, *encouragement* and *positive reinforcement* when the CATTS intervention was instituted. In contrast, teachers in Experimental Group 2, Period 2 only increased by 6%. The effect of the CATTS intervention is evident.

The target pupils' behavior for Experimental Group 1, Period 2 increased by 133.61% in asking questions in contrast to Experimental Group 2, Period 2 which decreased by *-45.00%*. This indicates that rejectees assigned to classrooms in which there was no CATTS intervention did not participate very often. In contrast, rejected pupils in Experimental Group 1, Period 2 increased their participation greatly. These results suggest that classroom teachers were being motivated by the CATTS feedback to increase their classroom participation. In turn, the teacher behavior correlated with the behavior of the target children in the classroom, resulting in increased pupil questioning behavior.

Hypothesis 2 predicted that Group 2, Period 3 Group 2, Period 2, and the results supported this hypothesis. Teachers and target pupils in Experimental Group 2 did increase in all interaction categories in Phase 3 as compared to Phase 2. These results indicate that the CATTS intervention significantly improved the teacher categories, especially the teacher positive feedback category. In Phase 2 there was a 6% improvement but in Phase 3 it increased to 99.69%. In looking at the target category, *raises hand*, there was an increase from 80% to 390% for Phase 3. These data again suggest that the CATTS data phone feedback intervention did positively influence the classroom dynamics.

Other research studies have offered support for this finding. Research efforts by VanEvery (1971) and Schmitt (1969) found that practice over time using CATTS facilitates skill acquisition. VanEvery (1971) found that therapist trainees who had received CATTS feedback produced significantly more social reinforcement patterns and a higher therapist reinforcement/patient response than those trainees who received no CATTS feedback. Schmitt (1969) gave teacher trainees feedback on their use of broad questions. Those trainees who received CATTS feedback spent significantly more time using broad questions in the treatment phase in comparison to the baseline phase.

Hypothesis 3 predicted that a replication effect would take place, that is, Experimental Group 2, Period 3 = Experimental Group 1, Period 2 for all six interaction categories. The replication effect was especially evident in the data in the teacher category, makes statements (Experimental Group 1, Period 2 = 60.66% and Experimental Group 2, Period 3 = 65.41% increase), and in the target categories of answer questions (Experimental Group 1, Period 2 = 157.44% and Experimental Group 2, Period 3 = 206.27% increase).

Further evidence of replicability in the results can be seen in the increase of quality and frequency of teacher interactions in both Experimental Group 2, Period 3 and Experimental Group 1, Period 2. Because of the CATTS intervention teachers were more supportive, as indicated by the increase in teacher use of positive reinforcement. But more importantly, there was increase in the target children's participation in the classroom, as revealed by the percentage increases in pupil questions and hand raises.

In conclusion, this study demonstrates how social status can be increased through the CATTS data phone configuration. More specifically, a direct relationship was shown between the input variables (pretest scores), process variables (classroom interaction as affected by the CATTS intervention), and the product variables (the posttest scores).

The next chapter discusses the implications of the results for research related to teacher behavior, teacher education and special education.

CHAPTER VI

IMPLICATIONS

The previous chapters delineated: (a) the problem under investigation, (b) the literature germane to the problem, (c) the hypotheses to be tested, (d) the method used to test the hypotheses, (e) the results, and (f) the discussion generated from the results. The present chapter focuses on the implications of the study for research related to teacher behavior, teacher education and special education.

Teacher Behavior Research

Mitzel (1957) was one of the first to try to correlate input and process with product variables in teacher behavior research. His model stressed the interactions between: (a) teacher characteristics, (b) environment, (c) teacher behavior, and (d) pupil behavior change. Mitzel emphasized that theoretical paradigms needed to be conceptualized before implementation of teacher behavior studies. Gage (1972) concurred in the need of theoretical models to conduct teacher behavior research, which would allow the researcher to investigate process-product interactions in specific teaching situations.

Gagné (1970), in a discussion of the Coleman Report, re-emphasized the need to conduct teacher behavior studies which investigated process-product variable interactions, because teacher behavior research showed a dearth of studies in this field. In further analysis of Coleman's results, Gagné suggested that studies which emphasized process-product variable relationships needed re-evaluation because they were not pinpointing specific teacher-pupil behaviors. Dunkin and Biddle (1974) have also proposed a model which is in accord with the fundamental theoretical framework of Mitzel (1957), Gage (1972), and Gagné (1970).

In a recent review of the literature on teacher behavior studies in special education Semmel, Semmel and Morrissey (1976) also found a dearth of special education studies which explored input, process, product relationships. Few investigations were found which correlated observed classroom process with pupil outcomes. Semmel et al. (1976) suggest that the potentially most useful investigations in teacher behavior research are those which incorporate the input, process, product model. They also suggest that teacher behavior research must stress research which incorporates multivariate interactions if the field is to progress toward isolating critical attributes of the teaching process.

In the present study a three-stage input, process, product model was used to conduct the research in improving low social status of rejected children. The application of the theoretical framework of teacher behavior research to this study incorporated a modification of the model presented by Semmel et al., 1976 (see Figure 7). The results indicated that the pupils and teacher classroom interactions, the process variables, significantly contributed to the change in product variables on the posttest scores.

This study also contributes to the field of teacher behavior research because it was able to relate specific teacher behaviors to results in pupil performance. Specifically, the data showed that teachers asked more questions and gave more positive feedback to the rejected children following the CATTS intervention. Further analysis of the data revealed that these two specific categories of teacher behavior highly correlated with the gain in social status of the rejected children.

The present investigation has other implications for teacher behavior

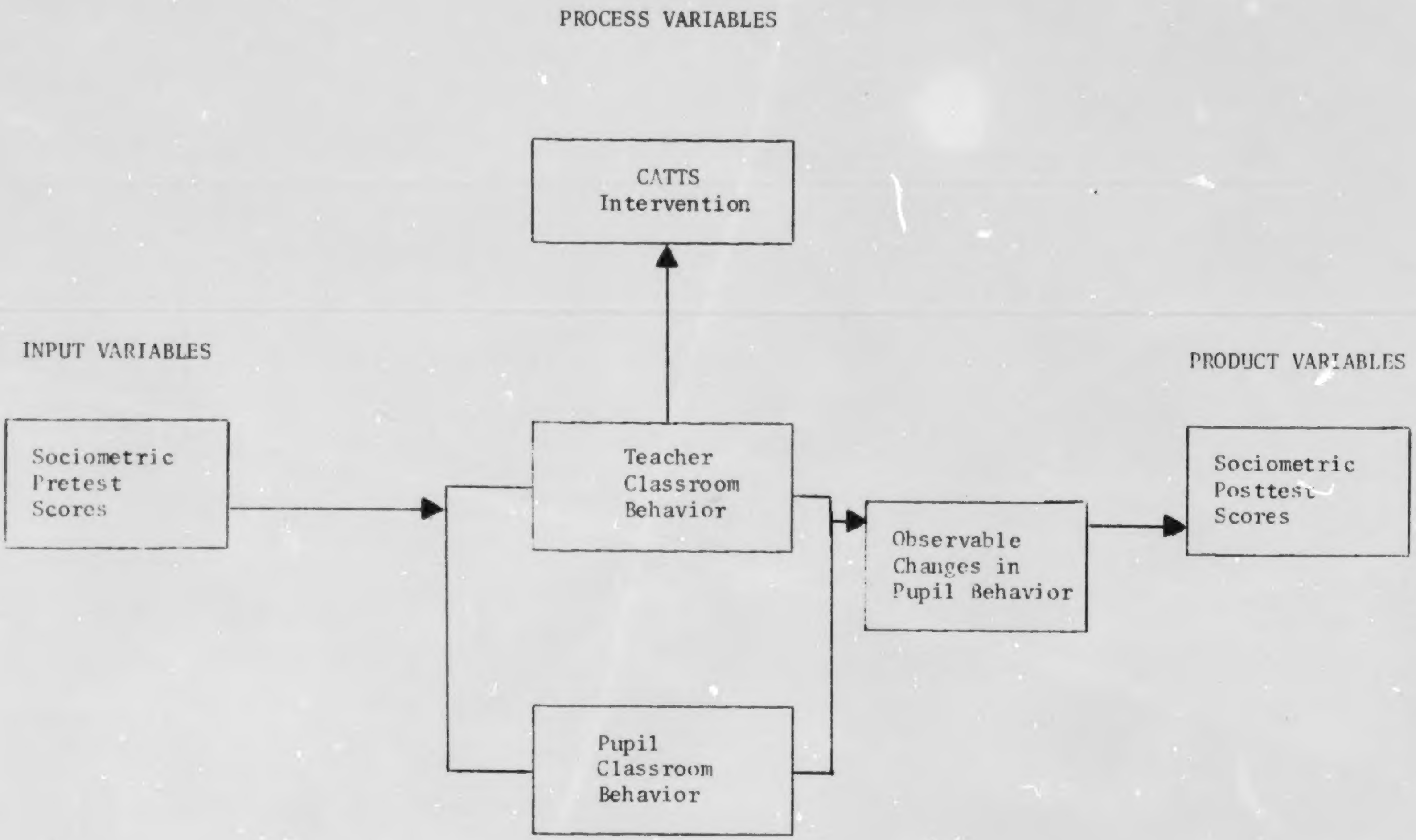

PROCESS VARIABLES
CATTS Intervention
INPUT VARIABLES
PRODUCT VARIABLES
Sociometric Pretest Scores
Teacher Classroom Behavior
Observable Changes in Pupil Behavior
Sociometric Posttest Scores
Pupil Classroom Behavior

Figure 7. A model for changing low social status.

research because, while no causal relationship is stated, it would appear that teacher behavior is a significant variable in altering the social perceptions of classroom peers towards socially rejected pupils in the classroom. In the present study, data revealed that teachers were more encouraging, nurturing and reinforcing in their interactions with the rejected children. It is suggested that the teachers contributed to a chain of events in the classroom which caused the rejected children to interact more appropriately. The target children's data revealed increases in their total classroom participation, especially in asking and answering questions. The target children's changed behavior, together with the teachers' changed behavior, resulted in a gain in their social status. Thus, it is suggested that the teacher behaviors focused on in this study contributed to changes in group dynamics, changes that resulted in a gain in social status for most of the rejectees. In essence, this study pinpoints some of the critical attributes in the training process which correlate with increases in the social status of rejected children.

Teacher Training

Review of the conceptual framework of teacher-training literature reveals that new emphasis must be given to defining a set of research activities which identify the methods and principles for the realization of a permanent change in teacher behavior, attitudes and knowledge (Semmel, Semmel & Morrissey, 1976; Turner, 1972). Semmel and his associates maintain that: "Central to the concept of teacher training is the need for generalizing the results of inquiry in teacher training towards building an empirically developed instructional science of training teachers (p. 255)." Results from the present investigation suggest the utilization of teacher-training components for inservice teacher training and particularly for the Competency-Based Teacher Education (CBTE) movement.

Inservice Education

A survey of inservice education reveals that it is an outmoded system that has not changed in the last two decades. It is usually fragmented, repetitious, and impractical for classroom implementation. Buskin (1970) notes that inservice training as it exists today has little or no carry-over into the teacher's classroom because the content is so trivial that it lacks meaningful application to the teacher's individual needs. Too often, a typical inservice program is either a 1-hour workshop or a 30-minute demonstration of a new educational innovation. In addition, inservice is often inconveniently scheduled for the teacher. It is usually scheduled at the convenience of the administrators or workshop presenter after school or on weekends. Thus, teachers must leave their classrooms in order to gain new skills. Inservice teacher trainees do not use the most natural setting - the teacher's own classroom.

This study demonstrates the feasibility of training teachers' new skills directly in their own classroom. This *in situ* skill building was realized through the use of the Computer-Assisted Teacher Training System (CATTS) in a remote field setting, utilizing a data phone configuration. Teachers were advised of ways in which they could encourage participation of low-status children in the classroom. This research effort demonstrated that the frequency of interaction of teachers with low social status children was significantly increased when teachers were provided with immediate post-session feedback in their classrooms. These teaching behaviors correlated with significantly higher posttest sociometric scores of low-status children.

Turner (1972) emphasized the use of new technology as an innovative direction for inservice training. He suggested that a model of inservice should (a) utilize an on-line real-time computer; (b) take place in the classroom during the school day; (c) be individually suited to particular classroom needs; (d) involve the teachers' active participation; and (e) give immediate feedback to the teacher on his/her performance. The present investigation has demonstrated the utility of a specific, field-based computer technology developed by Semmel and his associates. The implications are clear for future uses of CATTS in field-based settings. While computer technology remains relatively expensive, there is every reason to believe that cost-effectiveness ratios will soon be sufficiently favorable to warrant the feasibility of implementing CATTS configurations extensively throughout the nation for the purpose of inservice teacher education.

Prominent workers in the field have maintained that there is a great need for systematic field-based training approaches. A field-based CATTS system could be an integral part of a Competency-Based Teacher Education Program (CBTE). There is a clear need for CBTE programs in direct response to educational accountability demands. CBTE programs are based on three primary components: (a) competency skills stated in behavioral terms, (b) explicit, public criteria, and (c) teacher accountability for meeting these criteria. Most competency-based teacher education programs also emphasize field setting, protocol and training materials, systematic progress, exit requirements, and systematic feedback. CATTS, with its particular capabilities for capturing relevant teacher-pupil interactions, fulfills many of the CBTE criteria. Hence, CATTS has potential for becoming an integral part of the CBTE approach to teacher training. In fact, the system may well be the only extant method for dealing with the feasibility issues raised by the demands of CBTE programs with specific emphasis on teacher performance criteria.

Special Education

Social Status Interventions

Recent reviews of social status intervention studies reveal that few of the research efforts have incorporated efficient strategies in changing social status in the classroom. Only a small number of studies have used the teacher as the change agent in the intervention strategy. Rather, these studies have (a) taken low-status children out of the classrooms and given them individual and/or group counseling, (b) taken children from their classrooms by experimenters and given them socially integrative skills and/or (c) given low-status children "star" roles in plays.

In contrast to the majority of social status intervention studies, this investigation used the classroom teacher as the primary change agent in the regular classroom setting. The results suggest that the teacher's behavior was effective in changing the social status of the low-status, rejected pupils, as measured by sociometric instruments.

Mainstreaming

The placement of exceptional children in the public schools has been a controversial educational concern. Research regarding the efficacy of homogeneously grouped special classes indicates that: (a) special classes fail to show significant achievement gains in children in special classes when compared to children placed in regular classes, (b) special classes consistently have a disproportionate number of minority students, and (c) special classes appear to stigmatize and/or label children (Mercer, 1971). Due to the negative effects attributed to traditional special education placement and the lack of academic achievement for special class pupils, other alternative program strategies have been suggested and implemented.

The strategy which is gaining popularity - unfortunately, with little empirical validity - is that of placing exceptional children into the regular class to receive instruction for part or all of the school day. Recent literature has shown that attempts at "mainstreaming" have not met with a high degree of success (Gottlieb & Budoff, 1972). More specifically, the research indicates that handicapped children are not being accepted in the regular classrooms because of their socially inappropriate behaviors (Goodman, Gottlieb, & Harrison, 1972). These behaviors are often the same for all low-status children, regardless of their educational placement (Gronlund, 1968). Other research studies indicate that teacher biases

in the regular classroom (Brophy & Good, 1974; Shotel, Iano, & McGettigan, 1970). If the teacher bias theory is plausible, then the results of this study would appear to have further implications for changing teacher behaviors in regular classroom settings.

Mainstreaming is often difficult because teachers are not prepared for the role of teaching handicapped children. This investigation demonstrated a significant increase in the teacher/low-status pupil interactions from the baseline to treatment phases of the study. The teachers not only changed their frequency of interactions with the rejected pupils, but also the quality of their interactions. The teachers asked questions, called upon children, answered questions, and gave positive feedback more often at the end of the study than at the beginning. In addition, a direct relationship was shown to exist between the increase of teacher interactions in the classroom and the score improvements of the low social status children. Therefore, this study has implications for implementing a teacher-training mainstreaming model. The regular teachers, through the implementation of a CATTS data phone configuration, could gain new skills and develop positive attitudes towards "exceptional children." CATTS intervention could reinforce regular classroom teachers' positive behaviors when interacting with "mainstreamed" handicapped children. Conversely, negative teacher and/or peer behaviors could be extinguished through CATTS systematic feedback. Hence, through systematic *in situ* CATTS training, the classroom teacher could be trained to facilitate the mainstreaming of handicapped children into his/her classroom.

Although this study has shown the effectiveness of the CATTS data phone configuration for the modification of teacher-pupil interactions, the cost-effectiveness of such a system has not been established. Many school corporations have financial limitations which make the cost factor a serious limitation in adopting a CATTS program of inservice training. If the system is shown to be efficient and effective in developing a broad range of teaching skills, it could be implemented through cooperative, shared-time computer delivery paradigms which would significantly reduce the cost-effectiveness ratio. There is clearly a need for cost-effectiveness studies of the CATTS delivery systems.

This research investigation was undertaken because there was a great need for improved inservice programming. Research has shown that inservice training as it exists needs restructuring, since the immediate needs of the classroom teachers are apparently not being met. Turner (1972) and others suggest the use of computer technology to update inservice training and make it field-based oriented. Semmel's (1975) CATTS model incorporates an on-line real-time computer, delivers training directly to the classroom during the school day, is individually suited to a teacher's particular classroom needs, involves the teacher's active participation, and provides the teacher with rapid feedback regarding classroom performance. It would appear that CATTS has particular merit as an innovative inservice training program. Perhaps the results of this investigation will stimulate further attempts to utilize CATTS toward improving instructional processes for handicapped pupils and thereby increase the probability that such children will gain a greater acceptance among both their teachers and peers in the public schools.

CHAPTER VII

SUMMARY

The primary purpose of the study was to increase the low social status of rejected children in target classrooms through the in situ intervention of a Computer-Assisted Teacher Training System (CATTS). This was facilitated by using a three-stage evaluation model which stressed input, process, and product variable interactions. The input variables were defined as the pupils' pretest sociometric scores; the process variables were defined as the classroom interactions as they were modified by the CATTS intervention; and the product variables were defined as the pupils' posttest sociometric scores.

This study was implemented in a field-based setting 200 miles away from the CITH computer encoding station. Sixteen teachers in an elementary school setting, as well as 32 low-status children, were the target population. At the beginning of the study, a sociometric instrument was used to determine who were the low-status children in the classroom. In each classroom, two low-status children were selected on the basis of having the two lowest rankings in the class on the sociometric measures. Classrooms (n = 16) were divided into two groups after obtaining baseline data on the teacher/low-status pupils' interactive behavior. Teachers (n = 16) were paired as high-low interactive teachers with low-status children (Experimental Group 1 n = 8, Experimental Group 2 n = 8). During the treatment phase, teachers in Experimental Group 1 received 12 CATTS post session feedback opportunities in the format of a hardcopy of a computer printout, which was a profile of the classroom teachers' interaction with low-status children. Teachers in Experimental Group 2 received only 7 opportunities of CATTS post session hardcopy computer printout feedback. At the end of study, posttesting on sociometric measures was administered to all children.

It was hypothesized that teacher and target classroom interactions in Experimental Group 1 would relate significantly to the change in posttest scores. Teachers and pupils in Experimental Group 2 classroom interactions were also hypothesized to correlate significantly with the change in posttest scores. In addition, it was hypothesized that teacher and target interactions in the classroom for both Experimental Groups 1 and 2 were to increase in the periods in which the CATTS intervention was instituted as compared to periods in which the CATTS feedback opportunities were not available. Lastly, a replication effect was hypothesized; that is, that Experimental Group 1, Period 2 would be equal to Experimental Group 2, Period 3.

Analysis of data showed that posttest scores of the rejected pupils significantly increased from pre to posttesting periods. Data revealed that teachers increased in their frequency of giving positive reinforcement and asking questions in the classroom as a result of the CATTS data phone feedback intervention. The analysis of data also showed that the low-status pupils increased in their classroom interactions with the teachers from baseline to treatment phases. More importantly, a stepwise multiple regression analysis showed that increase in posttest scores was significantly related to the increase in teacher interactions in the classroom.

The results of this investigation indicated that the CATTS intervention influenced the classroom behavior of the teacher, which in turn was directly related to the posttest scores of the rejected pupils. This study, then, has implications for modifying teacher behaviors toward altering the sociometric status of rejected school children. Support was offered for the feasibility of identifying meaningful process-product relationships in teacher behavior research.

This investigation, through its utilization of the CATTS data phone configuration, also has implications for the development and realization of innovative in situ inservice teacher-training programs. Through the use of the CATTS data phone configuration the teacher could gain specific skills in the classroom which would facilitate the integration and the teaching of mainstreamed handicapped children.

The results from this study have shown the modification of teacher behavior by the CATTS intervention, and that such modifications correlated with the increased social acceptance of rejected pupils. It is suggested that in the future CATTS be used to modify the classroom behaviors of teachers through the development of in situ training programs.

REFERENCES

Acheson, K. A. The effect of feedback from televised recordings and three types of supervisory treatment on selected teacher behavior. *Dissertation Abstracts*, 1964, *25*, 3986.

Adelman, H. S. The resource concept: Bigger than a room! *Journal of Special Education*, 1972, *6*, 361-368.

Ainsworth, H. An exploratory study of educational, social, and emotional factors in the education of mentally retarded children in Georgia Public Schools. Athens, Georgia: University of Georgia, 1959.

Allen, D. W. & Young, D. B. Television recordings: A new dimension in teacher education. Palo Alto, California: Stanford University, School of Education, 1966, (Mimeo).

Amidon, E. J *Interaction analysis: Theory research and application*. Reading, Mass.: Addison Wesley Pub., 1967.

Amidon, E. J. & Flanders, N. A. *The role of the teacher in the classroom: A manual for understanding and improving teachers' classroom behavior*. Minneapolis: Amidon and Associates, 1963.

Amidon, E. J. & Hoffman, R. Interaction analysis as a feedback system in teacher preparation, 1965, (Mimeo).

Amidon, E. J. & Hunter, E. *Improving teaching: The analysis of classroom verbal interaction*. New York, New York: Holt, Rinehart and Winston, Inc., 1966.

Anderson, H. H. & Brewer, J. E. Studies of the effects of dominative and integrative contacts on childrens' classroom behavior. Applied Psychological Monographs, No. 8. American Psychological Association: Stanford University Press, 1946.

Andrews, T. E. Manchester interview: *Competency-based system of teacher education*. AACTE, Committee on Performance-based Teacher Education, Washington, D.C., 1972.

Atkinson, G. The sociogram as an instrument in social studies teaching and evaluation. *Elementary School Journal*, 1949, *50*, 74-85.

Atyeo, M. J. The influence of an adult model on behavior and attitudes of young children. *Journal of Educational Research*, 1972, *66*, 147-149.

Baldwin, K. The educable mentally retarded child in the regular grades. *Exceptional Children*, 1958, *25*, 106-108.

Barclay, R. Interest patterns associated with measures of social desirability. *Personnel and Guidance Journal*, 1966, *45*, 56-60.

Barksdale, M. & Atkinson, A. A resource room approach to instruction for the educable mentally retarded. *Focus in Exceptional Children*, 1971, *3*, 12-15.

Beez, W. V. *Influence of biased psychological reports on teacher behavior and pupil performance*. Bloomington, Indiana: Indiana University, 1970.

Bell, C. G. Can the art of teaching be structured? *Journal of Home Economics*, 1968, *62*, 34-39.

Bondi, J. C., Jr. Feedback from interaction analysis: Some implications for the improvement of teaching. *Journal of Teacher Education*, 1970, *21*, 189-196.

Bondi, J. C. & Ober, R. L. The effect of interaction analysis feedback on the verbal behavior of student teachers. Paper presented at the annual meeting of the American Educational Research Association, Los Angeles, California, February 1969.

Bonney, M. E. A study of constancy of sociometric ranks among college students over a two year period. *Sociometry*, 1955, *18*, 275-286.

Bonney, M. E. A study of the sociometric process among sixth-grade children. *Journal of Educational Psychology*, 1946, *37*, 356-372.

Bonney, M. E. Assessment of efforts to aid socially isolated elementary school pupils. *Journal of Educational Research*, 1971, *64*, 359-364.

Bonney, M. E. Personality traits of socially successful and socially unsuccessful children. *Journal of Educational Psychology*, 1943, *34*, 449-472.

Bonney, M. E. *Popular and unpopular children, a sociometric study*. New York: Beacon House, 1947.

Bonney, M. E. Relationships between social success, family size, socioeconomic home background and intelligence among school children in grades III to V. *Sociometry*, 1944, *7*, 26-39.

Bowman, J., Freeman, L., Olson, P. A., & Pieper, J. *The University can't train teachers*. Lincoln, Nebraska: Nebraska Curriculum Development Center, 1973.

Bronfenbrenner, U. The measurement of sociometric status, structure and development. Sociometry Monographs, No. 6, New York: Beacon House, 1945.

Brophy, J. E. & Good, T. L. Teacher-student relationships: Causes and consequences. New York: Holt, Rinehart, and Winston, 1974.

Broudy, H. S. A critique of performance-based teacher education. AACTE, Committee on Performance-based Teacher Education, Washington, D.C., 1972.

Brown, D. Helping adolescents win social acceptance. High School Journal, 1955, 38, 157-162.

Brown, J. A. & MacDougal, M. A. The impact of teacher consultation on self-perceptions of elementary school children. Education, 1973, 93, 339-345.

Burdin, J. L. & Reagan, M. T. (Eds.). Performance-based certification of school personnel. ERIC Clearinghouse on Teacher Education and the Association of Teacher Education, Washington, D.C., 1971.

Burke, C. The individualized, competency-based system of teacher education. AACTE, Committee on Performance-based Teacher Education, Washington, D.C., 1972.

Bush, R. N. Second Annual Report, 1968, Stanford Center for Research and Development in Teaching, ERIC Document Reproduction Service No. 024 642.

Buskin, M. Putting the screws to inservice training. School Management, 1970, 14, 22-25.

Buswell, M. M. The relationship between the social structure of the classroom and the academic success of the pupils. Journal of Experimental Education, 1953, 22, 37-52.

Campbell, D. T. & Stanley, J. C. Experimental and quasi-experimental designs for research. Chicago: Rand McNally, 1968.

Campbell, J. C., Hoffman, L. W., & Hoffman, M. L. (Eds.). Peer relations in childhood. Review of Child Development Research. New York: Russel Sage Foundation, 1964.

Caplin, M. D. The relationship between self-concept and academic achievement and between level of aspiration and academic achievement. Dissertation Abstracts, 1966, 27, 979-A.

Carlson, K. W. Increasing verbal empathy as a function of feedback and instruction. Counselor Education and Supervision, 1974, 15, 208-213.

Carter, T. P. The negative self-concept of Mexican-American student. *School and Society*, 1968, *96*, 217-219.

Chaires, M. C. *Improving the social acceptance of educable mentally retarded pupils in special classes*. Bloomington, Indiana: Indiana University, 1966.

Christoplos, R. & Renz, P. A. A critical examination of special education programs, *Journal of Special Education*, 1969, *3*, 371-379.

Commos, H. H. Some characteristics related to social isolation of second-grade children. *Journal of Educational Psychology*, 1962, *53*, 38-43.

Cox, F. N. Sociometric status and individual adjustment before and after play therapy. *Journal of Abnormal and Social Psychology*, 1953, *48*, 354-356.

Crabbs, M. A. Listening workshops for teachers. *The School Counselor*, 1972, *20*, 61-63.

Deno, E. Special education as developmental capital. *Exceptional Behavior*, 1970, *37*, 229-237.

Dentler, B. A. & Mackler, B. Some factors associated with popularity. *Journal of Educational Psychology*, 1944, *35*, 513-535.

Dentler, B. A. & Mackler, B. Ability and sociometric status among normal and retarded children: A review of the literature. *Psychological Bulletin*, 1962, *59*, 273-283.

Deshields, S. M. *Staff development through the teacher education center concept*, 1971, ERIC Document Reproduction Service No. ED 275 391.

Dowd, T. E. & Blocker, D. H. Effects of immediate reinforcement and awareness of response on beginning counseling behavior. *Counselor Education and Supervision*, 1974, *15*, 190-197.

Dunkin, M. J. & Biddle, B. J. *The study of teaching*. New York: Holt, Rinehart and Winston, 1974.

Dunn, L. Special education for the mildly retarded--Is much of it justifiable? *Exceptional Children*, 1968, *35*, 5-22.

Dusek, J. B. & O'Connell, E. J. Teacher expectancy effects on the achievement tests performance of elementary school children. *Journal of Educational Psychology*, 1973, *65*, 371-377.

Dyer, H. Accountability of the public educators. Aerospace Education Foundation, *Technology and Innovation in Education*, New York: Praeger Publishers, 1968.

Edelfelt, R. A. The reform of education and teacher education: A complex task. Journal of Teacher Education, 1972, 23, 117-125.

Elam, S. Performance-based teacher education: What is the state of the art? Washington, D.C., American Association of Colleges for Teacher Education, 1971.

Elfenbein, I. M. Performance-based teacher education programs, a comparative description. AACTE, Committee on Performance-based Teacher Education, Washington, D.C., 1972.

Elkins, D. Some factors related to the choice-status of ninety eighth-grade children in a school society. Genetic Psychology Monograph, 1958, 58, 207-272.

Flanders, N. A. Analyzing teacher behavior. Reading, Massachusetts: Addison-Wesley, 1970.

Flanders, N. A. Interaction analysis in the classroom. Ann Arbor, Michigan: University of Michigan, 1967.

Flanders, N. A. Teachers influence pupil attitudes and achievement. Final Report, 1960, University of Minnesota, U. S. HEW Project 397.

Flanders, N. A. The changing base of performance-based teaching. Phi Delta Kappan, 1974, 55, 312-315.

Flanders, N. A. & Havumaki, S. The effects of teacher-pupil contacts involving praise on the sociometric choice of student. Journal of Educational Psychology, 1960, 51, 65-68.

Flanders, N. A. & Simon, A. Teacher effectiveness. In C. Harris (Ed.), Encyclopedia of Educational Research, Third edition, New York: MacMillan Co., 1960.

Flynn, T. M. & Flynn, L. A. The effect of a part-time special education program on the adjustment of EMR students. Exceptional Children, 1966, 33, 97-105.

Fortune, J. C., Cooper, J. M., & Allen, D. W. The Stanford summer micro-teaching clinic 1965. The Journal of Teacher Education, 1967, 18, 389-393.

Gage, N. L. Teacher effectiveness and teacher education. Palo Alto, California: Pacific Books, 1972.

Gage, N. L., Leavitt, G. S., & Stone, G. C. Teachers' understanding of their pupils and pupils' ratings of their teachers. Psychological Monographs, No. 21, American Psychological Association, Washington, D.C., 1955.

Gagné, R. M. Policy implications and future research: A response. In Do teachers make a difference? U.S. Office of Education, Washington, D.C., U.S. Government Printing Office, 1970, 169-73.

Gallop, G. H. Fourth annual gallop poll of public attitudes toward education. Phi Delta Kappan, 1972, 53, 33-46.

Gazda, G. M. Systematic human relations training in teacher preparation and inservice education. Journal of Research and Development in Education, 1970, 4, 47-51.

Gerard, H. B. & Miller, N. Group dynamics. In P. R. Farnsworth (Ed.), Annual Review of Psychology, 1967.

Goldberg, M. I. Adapting teacher styles to pupil differences: Teachers for disadvantaged children. In A. H. Passow, M. Goldberg, & A. J. Tannenbaum (Eds.), Education of the Disadvantaged, New York: Holt, Rinehart and Winston, Inc., 1967.

Good, T. L. Student achievement level and differential opportunity for classroom response. Bloomington, Indiana: Indiana University, 1968.

Good, T. L. & Brophy, J. E. Behavioral expressions of teacher attitudes. Journal of Educational Psychology, 1972, 63, 617-624.

Good, T. L. & Brophy, J. E. Changing teacher and student behavior: An empirical investigation. Journal of Educational Psychology, 1974, 66, 390-405.

Goodkind, T. B. An evaluation of the effectiveness of the micro-teaching techniques in the training of elementary school teachers. In H. Hausdroff (Ed.), American Education Research Association Paper Abstract, 1969, 106.

Goodlad, J. I. The schools vs. education. Saturday Review, 1969, 52, 80-85.

Goodman, H., Gottlieb, J., & Harrison, R. H. Social acceptance of EMRs integrated into a nongraded elementary school. American Journal of Mental Deficiency, 1972, 76, 412-417.

Gottlieb, J. & Budoff, M. Attitudes toward school by segrated and integrated retarded children: A study and experimental validation. Studies in Learning Potential, 1972, 2, No. 35. Research Institute for Educational Problems, 12 Maple Avenue, Cambridge, Mass.

Gottlieb, J. & Budoff, M. Social acceptability of retarded children in nongraded schools differing in architecture. Studies in Learning Potential, 1972, 2, 28.

Gottlieb, J., Cohen, L., & Goldstein, L. Social contact and personal adjustment as variables relating to attitudes toward EMR children. Studies in Learning Potential, Research Institute for Educational Problems, Cambridge, Massachusetts, 1973, 3, 51.

Gottlieb, J., & Davis, J. E. Social acceptance of EMRs during overt behavior interactions. Boston: Unpublished study, 1971.

Gottlieb, J., Hutten, L., & Budoff, M. A preliminary evaluation of the academic achievement and social adjustment of EMRs in a nongraded school placement. Boston: Unpublished study, 1971.

Gozali, J. Perception of the EMR special class by former students. Mental Retardation, 1972, 10, 34-35.

Gronlund, N. E. Accuracy of teachers judgments concerning the social status of sixth-grade pupils. Sociometry Monographs, No. 25, New York: Beacon House, 1951.

Gronlund, N. E. Acquaintance span and sociometric status. Sociometry, 1955, 18, 62-68.

Gronlund, N. E. Sociometry in the classroom. New York: Harper and Row, 1959.

Gronlund, N. E. The accuracy of teachers' judgments concerning the sociometric status of sixth-grade pupils. New York: Beacon House, 1961.

Gronlund, N. E. The general ability to judge sociometric status: Elementary student teachers' sociometric perceptions of classmates and pupils. Journal of Educational Psychology, 1956, 47, 147-157.

Gronlund, N. E. & Whitney, A. P. The relationship between teachers' judgments of pupils' sociometric status and intelligence. Elementary School Journal, 1958, 59, 264-268.

Grossman, B. & Wrighter, J. The relationship between selection-rejection and intelligence, social status, and personality amongst sixth-grade children. Sociometry, 1948, 11, 346-355.

Guinouard, D. E. & Rychlak, J. F. Personality correlates of sociometric popularity in elementary school children. Personnel and Guidance Journal, 1962, 40, 438-442.

Hammel, D., Iano, R., McGettigan, J., & Wilderholt, L. Retardates reading achievement in the resource room model: The first years. Training School Bulletin, 1972, 63, 105-107.

Hartup, W. W., Glazer, J. A., & Charlesworth, R. Peer reinforcement and sociometric status. Child Development, 1965, 38, 1017-1024.

Hass, R. B. Psychodrama and sociodrama. American Education, New York: Beacon House, 1949.

Havinghurst, R. J. & Neugarten, B. D. Society and education. Boston: Allyn and Bacon Co., 1957.

Haywood, H. C. Labeling: Efficacy, Evils, and caveats. Paper read at the Joseph P. Kennedy Jr. Foundation International Symposium on human rights, retardation, and research. Washington, D.C., 1971.

Heath, R. W. & Nielson, M. A. The research bias for performance-based teacher education. Review of Educational Research, 1974, 44, 463-484.

Heinrich, D. & McKugan, H. F. Immediate and delayed feedback procedures for modifying student teaching behavior according to a model of instruction. Paper presented to the American Educational Research Association, Los Angeles, February, 1969.

Hill, K. T. Relation of test anxiety intelligence to sociometric status. Child Development, 1963, 34, 767-776.

Hollander, E. P. & Julian, J. W. Leadership. In E. Gorgatta & W. W. Lambert (Eds.), Handbook of personality theory and research. Chicago: Rand McNally, 1968.

Hostrop, J. A., Mecklenberger, J. A., & Wilson, J. A. Accountability for education results. Hamden, Connecticut: Linnet Books Co., 1973.

Hough, J. B. & Amidon, E. J. Behavioral change in student teachers. In Amidon, E. J., & Hough, J. B. (Eds.), Interaction Analysis: Theory research and application, Reading Massachusetts: Addison Wesley Publishing Co., 1967.

Hough, J. B. & Ober, R. The effect of training in interaction analysis on the verbal teaching behavior of pre-service teachers. In E. J. Amidon & J. B. Hough (Eds.), Interaction Analysis: Theory, research and application, Reading Massachusetts: Addison Wesley Publishing Co., 1967.

Houston, J. A., Mecklenberger, J. A., & Wilson, J. A. Accountability for education results. Hamden, Connecticut: Linnet Books Co., 1973.

Hyman, R. T., (Ed.). Teaching: vantage points for study. New York, New York: J. B. Lippincott Company, 1968.

Iano, R. P. Shall we disband special education classes? Journal of Special Education, 1972, 6, 167-177.

Iano, R. P., Ayers, D., Heller, J. B., McGettigan, J. F., & Walker, V.A. Sociometric status of retarded children in an integrative program. *Exceptional Children*, 1974, *40*, 267-272.

Jaski, E. B. The educon: let's dream a while. *Journal of Teacher Education*, 1973, *24*, 48-53.

Jackson, P., Silberman, M., & Wolfson, B. Signs of personal involvement in teachers' descriptions of their students. *Journal of Educational Psychology*, 1969, *60*, 402-407.

Johnson, G. O. A study of the social position of mentally-handicapped children in the regular grades. *American Journal of Mental Deficiency*, 1950, 55, 60-89.

Johnston, D. J. *Teacher inservice*. Oxford, England: Pergomon Press, 1973.

Jones, R. L. Labels and stigma in special education. *Exceptional Children*, 1972, *38*, 553-564.

Jones, R. L. Teacher education: preferences for teaching intellectually exceptional children. *Education and Training of the Mentally Retarded*, February, 1971, *6*, 43-48.

Jordon, J. B. *Intelligence as a factor in social position - a sociometric study in special classes for the mentally handicapped.* Unpublished doctoral dissertation, University of Illinois, 1960.

Kallenbach, W. W., Gall, M. D., & Meredith. Microteaching versus conventional methods in training elementary intern teachers. *Journal of Educational Research*, 1969, *63*, 136-141.

Katz, L. G. *Developmental stages of preschool teachers*. ERIC Clearinghouse on Early Childhood Education, Urbana, Illinois, 1972.

Kaufman, M. J., Semmel, M. I. and Agard, J. S. *Project PRIME: An overview.* U.S. Office of Education, BEH, Division of Research, Intermural Department of Special Education and Special Schools, Division of Program Evaluation, 1973.

Katz, L., & Kahn, J. On the matrix analysis of sociometric data. *Sociometry*, 1947, *10*, 233-241.

Kirk, J. Elementary school student teachers and interaction analysis. In Amidon, E. & Hough, J. B. (Eds.), *Interaction analysis: Theory, research and application*. Reading, Massachusetts: Addison-Wesley Publishing Co., 1967.

Knickerbocker, I. Leadership: A conception and some implications. *Journal of Social Issues*, 1948, *4*, 23-40.

Kranzler, G. D., Mayer, G. R., Dyer, C. O., & Munger, P. F. Counseling with elementary school children: An experimental study. *Personnel Guidance Journal*, 1966, *48*, 944-949.

Kreider, J. M. *Effect of computer-assisted teacher training systems feedback on increasing teacher use of pupil ideas with EMR children.* Unpublished doctoral dissertation, University of Michigan, 1969.

Kuhlen, R. G. & Lee, B. J. Personality characteristics and social acceptability in adolescence. *Journal of Educational Psychology*, 1943, *34*, 321-340.

Ledbetter, H. D. The effects of feedback from the use of interaction analysis in supervising student teachers. *Dissertation Abstracts*, 1968, *28*, 3529-3530A.

Leonard, W. P., Giles, G., & Paden, P. A study of the combined utilization of microteaching and experience supervisor feedback in the preparation of elementary school personnel. Mimeo, 1971.

Leyser, Y. *Teacher use of role playing methods and activities to cope with problems of rejection and isolation in the classroom*. Unpublished doctoral dissertation, Bloomington, Indiana University, Center for Innovation in Teaching the Handicapped, 1974.

Leyser, Y. The effects of role-playing in elementary school classrooms on children with low sociometric status. Bloomington, Indiana University Center for Innovation in Teaching the Handicapped, 1976.

Lilly, M. S. Improving social acceptance of low socioeconomic status, low achieving students. *Exceptional Children*, 1971, *37*, 341-347.

Locke, E. A., Carledge, N., & Koeppel, J. Motivational effects of knowledge of results: A goal-setting phenonmenon? *Psychological Bulletin*, 1968, *40*, 474-485.

Lohman, E., Ober, R., & Hough, J. B. A study of the effect of preservice training in interaction analysis on the verbal behavior of student teachers. In E. J. Amidon & J. B. Hough (Eds.), *Interaction Analysis: Theory, Research and Application*. Reading, Massachusetts: Addison-Wesley Publishing Co., 1967.

Ludwig, D. J. & Maehr, M. L. Changes in self-concept and stated behavioral preferences. *Child Development*, 1967, *38*, 453-467.

Lynch, W. W. & Ames, C. A comparison of teachers' cognitive demands in special and regular elementary classes. Bloomington: Indiana University, Center for Innovation in Teaching the Handicapped, Final Report, June, 1972.

Marak, G. E. The evolution of leadership structure. Sociometry, 1964, 27, 174-182.

Markle, S. M. Empirical testing of programs. In P. C. Lange (Ed.), Programmed instruction. Chicago, Illinois: The National Society for Study of Education, 1967.

Mauth, L. J. Psychology and the inservice education program. National *Elementary Principle, 1962, 41, 13-16.*

Mayer, R. G., Kranzler, G. D., & Mathes, W. A. Elementary school counseling and peer relations. Personnel and Guidance Journal, 1967, 46, 360-365.

Mayer, G. R., Dyer, C. O., Kranzler, G. D. & Munger, P. F. Counseling with elementary school children: An experimental study. Personnel and Guidance Journal, 1966, , 944.

McGraw, F. M., Jr. The use of 35mm time-lapse photography as a feedback and observation instrument in teacher education. Dissertation Abstracts, 1966, 26, 6533-6534.

McNeil, J. D. An experimental effort to improve instruction through visual feedback. Journal of Educational Research, 1962, 55, 283-285.

Mercer, J. R. Pluralistic diagnosis in the evaluation of black and chicano children. Paper presented at the annual meeting of the American Psychological Association, Washington, D. C., Sept., 1971.

Mercer, J. R. Sociocultural factors in labeling mental retardates. Peabody Journal of Education, 1971, 48, 188-205.

Mercer, J. R. The meaning of mental retardation. In R. Kock & J. C. Dobson (Eds.), The Mentally Retarded Child and his Family, New York: Brunner/Mazel, 1971.

Meyerowitz, J. H. The neighborhood sociometric. In H. Goldstein, J. W. Moss, & L. J. Jordan (Eds.), The Efficacy of Special Class Training on the Development of Mentally Retarded Children. Cooperative Research Project Number 619. Urbana, Illinois: The University of Illinois, 1965, 215-22.

Mitzel, H. E. A behavioral approach to the assessment of teacher effectiveness. New York: Division of Teacher Education, College of the City of New York, 1957. (mimeographed).

Mitzel, H. E. Teacher Effectiveness. In C. Harris (Ed.), Encyclopedia of Educational Research, Third edition, New York: MacMillan Co., 1960, 1481-1486.

Mood, A. M. *Do teachers make a difference?, Bureau of Educational Personnel Development, Washington, D. C.*, HEW, Government Printing Office, 1970, 1-24.

Moreno, J. L. *Who shall survive?* New York: Beacon House, 1953.

Moreno, J. L. *Who shall survive?* Washington, D. C.: Nervous and Mental Disease Publishing Co., 1934.

Muma, J. R. Peer evaluation and academic achievement in performance classes. *Personnel and Guidance Journal*, 1968, *46*, 580-585.

Muma, J. R. Peer evaluation and academic performance. *Personnel and Guidance Journal*, 1965, 47, 405-409.

Neugarten, B. L. Social class and friendship among school children. *American Journal of Sociology*, 1946, *51*, 305-313.

Olivero, J. L. Video recordings as a substitute for live observations in teacher education. *Dissertation Abstracts*, 1965, *48*, 191-197.

Olson, W. C. The improvement of human relations in the classroom, *Childhood Education*, 1946, *22*, 317-325.

Orme, M. W. J. The effects of modeling and feedback variables on the acquisition of a complex teaching strategy. Ann Arbor, Michigan, University Microfilms, 1967.

Peck, R. F. & Tucker, J. A. Research on teacher education. In R. M. W. Travers (Ed.), *Second Handbook of research on teaching*, Chicago: Rand McNally & Co., 1973.

Purkey, W. W. *Self-concept and school achievement*. Englewood Cliffs, New Jersey: Prentice Hall, 1970.

Reddy, W. B. Effects of immediate and delayed feedback on the learning of emphathy. *Journal of Counseling Psychology*, 1968, *16*, 59-62.

Reger, R. Resource rooms: Change agents or guardians of the status quo? *Journal of Special Education*, 1972, *6*, 355-360.

Retish, P. M. The effects of positive overt teacher verbal reinforcement on peer acceptance. Unpublished doctoral dissertation, Indiana University, 1968.

Richey, H. G. Growth of the modern conception of inservice education, in *National Society for the Study of Education Yearbook*. University of Chicago Press: Chicago, 1956, *56*, 35-66.

Riles, W. C. Public expectations. In R. W. Hostrop, J. A. Mecklen, & J. A. Wilson (Eds.), *Accountability for Educational Results*, Hamden, Connecticut: Linnet Books Co., 1973.

Roberts, J. D. A hard look at quality in inservice education. *National Elementary Principal*, 1964, *43*, 15-21.

Roberts, J. D. Improving the status of isolates. *National Elementary Principal*; 1952, *32*, 183-188.

Rosenshine, B. Evaluation of classroom instruction. *Review of Educational Research*, 1970, *40*, 279-300.

Rosenshine, B. *Teaching behaviors and student achievement*, National Foundation for Educational Research in England and Wales, Great Britain, King, Throne and Stace Ltd., 1971.

Rosenshine, B., & Furst, N. Research on teacher performance criteria. In B. O. Smith (Ed.), *Research in Teacher Education: A symposium*, Englewood Cliffs, New Jersey, Prentice Hall, Inc., 1971.

Rosenthal, R. *Experimenter effects in behavioral research*. New York: Appleton-Century-Crofts, 1966.

Rosenthal, R. & Jacobson, L. *Pygmalion in the classroom*. New York: Holt, Rinehart, and Winston, 1968.

Rosner, B. *The power of competency-based teacher education*. New York: Allyn and Bacon, Inc., 1971.

Rosner, B. & Kay, M. P. Will the promise of competence/performance based education be fulfilled? *Phi Delta Kappan*, 1974, *55*, 290-295.

Rousch, R. E. A study of change in selected teacher education interns' behavior using videotape recordings. Final report. January 1969. ERIC Document Reproduction Service No. ED 031 095.

Rubin, L. J. *Improving inservice education: Proposals and procedure for change*. Boston: Allyn and Bacon, 1971.

Rubin, L. J. *Inservice education*. Santa Barbara, California: Center of Coordination Education, 1970.

Rubin, R. & Barlow, B. Learning and behavior disorders: A longitudinal study, *Exceptional Children*, 1971, *38*, 293-299.

Rubin, R. A., Krus, P. & Barlow, B. Factors in special class placement. *Exceptional Children*, 1973, *39*, 525-532.

Rucker, C. N. Acceptance of mentally retarded junior high children in academic and non-academic classes. *Dissertation Abstracts*, 1968, *28*, 3038-3039.

Rule, S. A comparison of three different types of feedback on teachers' performance. University of Kansas, *Dissertation Abstracts*, 1972.

Sabatino, D. A. Resource rooms: The renaissance in special education. *Journal of Special Education*, 1972, *6*, 335-348.

Sabatino, D. A., Kelling, K. & Hayden, D. L. Special education and the culturally different child: Implications for assessment and intervention. *Exceptional Children*, 1973, *39*, 563-567.

Salvia, J., Clark, G. M. & Ysseldyke, J. E. Teacher retention of stereotypes of exceptionality. *Exceptional Children*, 1973, *39*.

Scandrette, O. C. Classroom choice status related to scores on components of the California test of personality. *Journal of Educational Research*, 1953, *46*, 291-296.

Schmieder, A. A. *Competency-based education: The state of the scene.* AACTE, Committee on Performance Based Teacher Education, Washington, D.C., 1973.

Schmitt, J. S. Modifying questioning behavior of prospective teachers of EMR children through a computer-assisted teacher training system, (Doctoral dissertation), Ann Arbor, Michigan: University of Microfilms, 1969.

Scriven, M. The methodology of evaluation. In *Perspectives on Curriculum Evaluation*. Chicago, Illinois: Rand McNally and Company, 1967.

Scriven, M. Prose and cons about goal-free evaluation. *Evaluation Comment*, 1972, *3* (4), 1-8.

Semmel, M. I. Application of systematic classroom observation to the study and modification of pupil-teacher interactions in special education. In Weinberg & Wood (Eds.), *Observation of pupils and teachers in mainstreamed and special education settings*, Minneapolis: University of Minnesota, Leadership Training Institute/Special Education, 1975.

Semmel, M. I. Project CATTS I: A computer-assisted teacher training system. In A. P. Van Teslaar (Ed.), *Studies in language and language behavior*, VII, Ann Arbor: University of Michigan, Center for Research on Language and Language Behavior, 1968.

Semmel, M. I. Teacher attitudes and information pertaining to mental deficiency. *American Journal of Mental Deficiency*, 1959, *53*, 566-574.

Semmel, M. I. *Technology in teacher education-1984: Toward the development of a computer-assisted teacher training system (CATTS) in the field of mental retardation*. Paper presented at the annual convention of the Council for Exceptional Children, Chicago, Illinois, 1970.

Semmel, M. I. Toward the development of a computer-assisted teacher training system (CATTS). In N. A. Flanders & G. Nuthall (Eds.), *The Classroom Behavior of Teachers*, 1972, *4*.

Semmel, M. I. & Myers, K. *Indiana pupil participation schedule*. Bloomington, Indiana: Center for Innovation in Teaching the Handicapped, 1971.

Semmel, M. I., Olson, J. L. & Weiske, W. M., Jr. An information and technical manual for the computer-assisted teacher training system (CATTS). Working paper 7.1., 1971.

Semmel, M. I. & Semmel, D. Competency-based teacher education: An overview. *Behavioral Disorders*, 1976, *1*(2), 69-82.

Semmel, M. I., Semmel, D. S. & Morrissey, P. A. Competency-based teacher education in special education: A review of research and training programs. Bloomington: Indiana University, Center for Innovation in Teaching the Handicapped, 1976.

Semmel, M. I. & Sitko, M. *A computer-assisted teacher training system*. Bloomington, Indiana: Indiana University, Center for Innovation in Teaching the Handicapped, 1973.

Semmel, M. I. & Sitko, M. *The use of CATTS in a preservice special education teacher-training program*. Bloomington, Indiana: Indiana University, Center for Innovation in Teaching the Handicapped, 1976.

Semmel, M. I., Sitko, M. & Kreider, J. The relationship of pupil-teacher interactions in classrooms for the TMR to pupil gain in communication skills. *Mental Retardation*, 1973, *11*, 7-13.

Semmel, M. I. & Thiagarajan, S. Observation systems and the special education teacher. *Focus on Exceptional Children*, 1973, *5*(7).

Shalock, H. D. The focus-knowledge, teaching or products. In J. L. Burden & M. T. Regan (Eds.), *Performance-based certification of school personnel*, ERIC Clearinghouse on Teacher Education and the Association of Teacher Educators, Washington, D. C., 1971.

Shotel, J. R., Iano, R. P. & McGettigan, J. F. Teacher attitudes associated with the integration of handicapped children. *Exceptional Children*, 1970, *36*, 679-680.

Silberman, M. Behavioral expression of teachers attitude toward elementary school students. Journal of Educational Psychology, 1969, 60, 402-407.

Simon, A. & Boyer, E. G. (Eds.). Mirrors for Behavior II: An anthology of observation instruments, (Vol. A and B), Philadelphia, Pennsylvania, Classroom Interaction Newsletter, c/o Research for Better Schools, Inc., 1970.

Sitko, M. C. A demonstration of computer-assisted teacher training system (CATTS) under controlled laboratory and simulated conditions, Bloomington, Indiana: Center for Innovation in Teaching the Handicapped, 1972.

Smith, B. O. Teacher for the Real World. Washington, D. C., AACTE, 1970.

Smith, G. H. Sociometric study of best liked and least liked children. Elementary School Journal, 1950, 51, 77-85.

Snapp, M. Resource classrooms or resource personnel? Journal of Special Education, 1972, 6, 383-388.

Spaulding, R. L. Educational intervention in early childhood, Vol. I, II, and III. Durham, North Carolina: Duke University, 1971.

Sternig, J. Oh no, not again. National Elementary Principal, 1962, 41, 17-21.

Taba, H & Elkins, D. With focus on human relations, a story of an eighth-grade classroom. Washington, D. C.: American Council on Education, 1950.

Taba, H. With perspective on human relations. Washington, D. C., American Council on Education, 1955.

Thiagarajan, S. The evaluation model and its application. Center for Innovation in Teaching the Handicapped, Indiana University, 1976.

Thomas, C. L. & Cooper, M. L. The modification of teacher behaviors which modify child behaviors. Progress report. Kansas University, Lawrence, 1969.

Thompson, G. G. & Powell, M. An investigation of the rating scale approach to the measurement of social status. Educational and Psychological Measurements, 1951, 11, 440-455.

Thomson, C. L., Holmberg, M. C. & Bear, D. M. The experimental analysis of training procedures for preschool teachers. Lawrence, Kansas: Kansas University, 1971.

Togio, R. Social status and school room aggression in third-grade children. *Genetic Psychological Monograph*, 1965, *71*, 221-268.

Towne, R. C. & Joiner, L. M. The effect of special class placement on self concept of ability of the educable mentally retarded child. East Lansing, Michigan: Michigan State University, 1966.

Turner, R. L. Relationships between teachers for the real world and the elementary models programmatic themes and mechanisms payoffs, mechanisms and costs. In B. Rosner (Chairman), *The power of competency-based teacher education*, Boston, Massachusetts: Allyn and Bacon, Inc., 1972.

Van Every, H. J. The application of a computer-assisted teacher training system to speech therapist training (Doctoral dissertation), Ann Arbor, Michigan: University of Michigan, 1971.

Veldman, D. J. & Brophy, J. E. Measuring teacher effects on pupil achievement. *Journal of Educational Psychology*, 1974, *66*, 319-324.

Walker, V. S. The efficacy of the resource room for educating retarded children. *Exceptional Children*, 1974, *40*, 288-289.

Ward, B. A. *Establishing a standard of performance.* Far West Laboratory for Educational Research and Development, 1973.

Weaver, P. A. *Effects of a computer-assisted teacher training system and teacher expectancies on teacher pupil interaction with EMR children.* Unpublished doctoral dissertation, University of Michigan, 1969.

Weber, W. A. & Cooper, J. M. *Competency-based teacher education: A scenario.* AACTE, Committee on Performance-Based Teacher Education, Washington, D. C., 1972.

Wilson, E. D. & Alcorn, D. Disability simulation and development of attitudes toward the exceptional. *Journal of Special Education*, 1969, *3*, No. 3, 303-307.

Wolf, R. L. Trial by jury: A new evaluation method. I. The process. *Phi Delta Kappan*, 1975, *57(3)*, 185-187.

Young, L L. & Cooper, D. H. Some factors associated with popularity. *Journal of Educational Psychology*, 1944, *35*, 513-535.

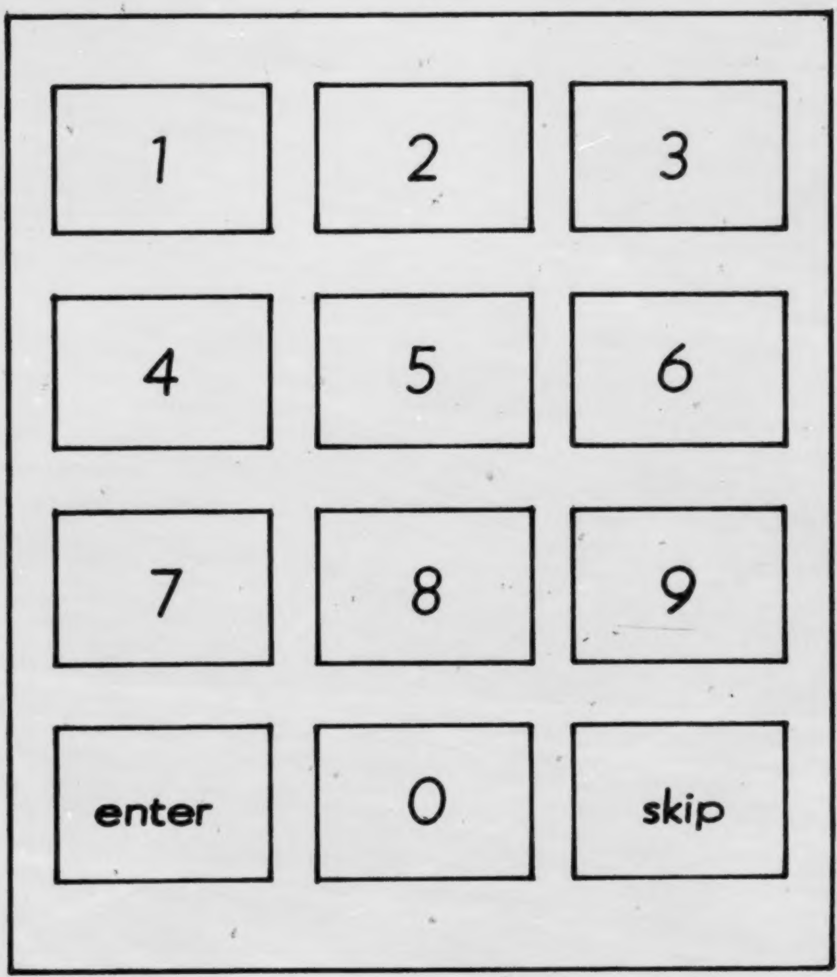
Zahn, R. D. The use of interaction analysis in supervising student teachers. In E. J. Amidon & J. B. Hough (Eds.), Interaction analysis: Theory, research and application. Reading, Massachusetts: Addison-Wesley, 1967.

Zahn, R. D. The use of interaction analysis in the supervision of student teachers. Dissertation Abstracts, 1965, 26, 1504.

APPENDIX A

The Button or Coding Box Configuration

BUTTON/CODING BOX


1
2
3
4
5
6
7
8
9
enter
0
skip

APPENDIX B

Indiana Interaction Index

Categories and Definitions

Indiana Interaction Index

Classroom Observation System

Categories

1. Asks question

2. Calls on

3. Answers question

4. Raise hand

5. Statement

6. Positive feedback

7. No response

Indiana Interaction Index

Category Definitions

1. Asks Question

   a. a response is expected (although a response may not occur).
   b. in addition, one or more of the following conditions must exist.
      (1) must pertain to the lesson (be on task).
      (2) can be answered by yes or no or nod of head.
      (3) can be answered by a long descriptive response.
      (4) can be answered by an opinion.
      (5) can require a person to demonstrate his understanding of a concept, either by defining the concept, by giving examples, and by summarizing the concept.

2. Calls on

   a. a person is called by name to respond to a question.
   b. a person is directed to answer a question by a nod.
   c. a person is directed to answer a question by being pointed at.

3. Answers Question

   a. must follow a question and be relevant to it.
   b. must be in the form of a statement or relevant motor response.
   c. must be on-task.
   d. in addition, at least one of the following conditions must be met:
      (1) can be a yes or no response.
      (2) can be nodding of head is a response.
      (3) can be reading aloud, singing, counting, spelling or reciting.

      (4) can be summarizing, reducing or expanding on information in such a way that he/she is doing more than merely recalling it.

4. Raises Hand

   a. must be relevant to the lesson
      (1) could follow a question.
      (2) could follow a statement.
      (3) could be a response to a question.

5. Makes a Statement

   a. states facts.
   b. gives opinion.
   c. lectures.
   d. rhetorical response.
   e. an expansion of fact after giving feedback.
   f. prompting.

6. Positive Response

   a. must follow a response to a question
      (1) repetition of answer verbally.
      (2) indication that the response or behavior is correct.
      (3) praise of the response.
      (4) response is written on board.

7. No Response

   a. must be relevant to the lesson
      (1) could follow a question.
      (2) could follow a statement.
      (3) could be a response to a question.

*If during or after the process of giving positive feedback any additional information is given it is coded as a statement.
Negative feedback is coded as a statement.

APPENDIX C

Instructions for Sociometric Testing

2/74
5/74

Dear Teachers,

Please follow these exact procedures when giving the sociometric test, About Me and My Friends in your classroom.

1. HAVE EACH CHILD PUT THEIR OWN NAME AT THE BOTTOM OF THE FIRST SHEET OF THE TEST.
2. PUT ONLY ONE CHILD'S NAME ON THE BOARD AND THEN ASK THEIR CLASSMATES TO RESPOND BY CHOOSING ONE OF THE FACES.
3. PLEASE EXPLAIN THAT THE (?) MEANS THAT THEY CAN'T MAKE A DECISION ABOUT THE CHILD WHOSE NAME IS ON THE CHALKBOARD BECAUSE THEY HAVE NOT KNOWN THEM LONG ENOUGH.
4. PLEASE EXPLAIN THAT THE ☺ FACE MEANS THAT THEY LIKE THE PARTICULAR CHILD WHOSE NAME IS ON THE CHALKBOARD.
5. PLEASE EXPLAIN THAT THE 😐 FACE MEANS THAT THEY DO NOT HAVE ANY TYPES OF FEELING ABOUT THE PARTICULAR CHILD WHOSE NAME IS ON THE CHALKBOARD.
6. PLEASE EXPLAIN THAT THE ☹ FACE MEANS THAT THEY DO NOT LIKE THE PARTICULAR CHILD WHOSE NAME IS ON THE CHALKBOARD.
7. PUT A CHILD'S NAME ON THE BOARD UNTIL ALL CLASS MEMBERS NAMES HAVE BEEN PUT ON THE BOARD.
8. PLEASE MAKE SURE THAT EVERY CHILD COPIES THE NAMES FROM THE CHALKBOARD IN THE CORRECT ORDER.
9. PLEASE GIVE THE CHILDREN PLENTY OF TIME TO MAKE THEIR SOCIOMETRIC CHOICES.
10. PLEASE EMPHASIZE THAT THERE IS NO TIME LIMIT ON THIS ACTIVITY.
11. HAVE CHILDREN RAISE HANDS WHEN THEY HAVE COMPLETED THEIR TEST.
12. PLEASE EMPHASIZE THAT THIS DATA WILL BE KEPT CONFIDENTIAL.

Thank you for your time and cooperation.

APPENDIX D

About Me and My Friends

1. Byran	?	[✓ ☺]	😐	☹
2. Shawn	[✓ ?]	☺	😐	☹
3. Steve	?	[✓ ☺]	😐	☹
4. Sue Ho.	?	[✓ ☺]	😐	☹
5. Sue Ha.	[✓ ?]	☺	😐	☹
6. Anna M.	?	☺	[✓ 😐]	☹
7. Debby	?	[✓ ☺]	😐	☹
8. Heidi	?	☺	😐	[✓ ☹]
9. Kurt	[✓ ?]	☺	😐	☹
10. Karin	?	☺	😐	[✓ ☹]
11. Kenny	?	[✓ ☺]	😐	☹
12. Randy	?	☺	[✓ 😐]	☹
13. Mickey	?	[✓ ☺]	😐	☹

YOUR NAME: Mickey

YOUR TEACHER:

14. Missy ? [✓ 🙂] 😐 ☹

15. Richard [✓ ?] 🙂 😐 ☹

16. Amy [✓ ?] 🙂 😐 ☹

17. Theresa ? [✓ 🙂] 😐 ☹

18. Natalie ? [✓ 🙂] 😐 ☹

19. Mikey ? [✓ 🙂] 😐 ☹

20. Greg [✓ ?] 🙂 😐 ☹

21. Beth ? 🙂 [✓ 😐] ☹

22. Jeff ? [✓ 🙂] 😐 ☹

23. Mona ? 🙂 [✓ 😐] ☹

24. Karla [✓ ?] 🙂 😐 ☹

25. Kelly ? [✓ 🙂] 😐 ☹

26. Ricky ? [✓ 🙂] 😐 ☹

YOUR NAME: ____________________

YOUR TEACHER: ____________________

APPENDIX E

Reading the Computer Printout

LONGFELLOW PROJECT

READING THE COMPUTER FEEDBACK PRINTOUT

CLASSROOM PARTICIPATION INDEX

TEACHER:
TARGET 1:
TARGET 2:
CODER:
DATE:
TIME:

INTERACTIONS

SOURCE	FREQUENCY
TEACHER TO TARGET 1	
TEACHER TO TARGET 2	
TEACHER TO OTHERS	
PUPILS TO TARGET 1	
PUPILS TO TARGET 2	

PARTICIPATION CATEGORY SUMMARY (FREQ)

CATEGORY	TEACHER	TARGET 1	TARGET 2	OTHERS
ASK ?"5				
CALLS ON				
ANSWERS ?				
HANDS UP				
STATEMENT				
POSITIVE FB				
NO RESPONSE				
TOTAL				

PARTICIPATION INDEX

(% OF TOTAL CODES)

TARGET 1
TARGET 2
OTHERS

PRINTOUT

The preceeding page is a reproduction of a computer printout. It is like the one that you'll be receiving during this phase of the study. The following pages are to be used as a guide in understanding your feedback printout.

HEADINGS

Each printout has several major headings. The headings on your printout will include: TEACHER; TARGET #1; TARGET #2; CODER; DATE and TIME; INTERACTIONS; PARTICIPATION CATEGORY SUMMARY; and PARTICIPATION INDEX.

1. TEACHER - The two-digit number identifies the teacher being observed. The first number indicates the grade i.e., 1-4; the second number identifies the section 1-4. Thus, 1-4 identifies the fourth section of the first grade.
2. PUPIL TARGET #1 and TARGET #2 - These are the two children in your classroom which we have been observing during the past three weeks. These children were selected for observation because they were most rejected by their classroom peers on a sociometric instrument.
3. CODER - This two-digit number identifies the observer who is coding the teaching interaction behaviors. There are six coders who are observers in this study, 0-1 - 0-6.

4. DATE - This five- or six-digit code identifies the month, date and year in which the teaching observation was made.

5. TIME - This ten-digit entry identifies the time of day in which the observation was made i.e., 9:30 - 10:00.

6. INTERACTION - This heading identifies all interactions that are cognitive or academic in nature that have transpired in the classroom as observed by coders using the Indiana Interaction Index (I.I.I.).

   a. TEACHER TO TARGET #1 - Indicates the frequency or number of interactions that occurred between the target child one and the teacher.

   b. TEACHER TO TARGET #2 - Indicates the frequency or number of interactions that occurred between the target child two and the teacher.

   c. TEACHER TO OTHER - Indicates the frequency total number of interactions that occurred between the teacher and all other children in the classroom excluding target #1 and target #2.

   d. PUPILS TO TARGET #1 - Identifies all interactions that were cognitive in nature which occurred between target # one and all other children in the classroom.

   e. PUPILS TO TARGET #2 - Identifies all interactions that were cognitive in nature which occurred between target # two and all other children in the classroom.

7. CATEGORY SUMMARY - This heading specifies the categories which are contained in the observation instrument (I.I.I.), which was utilized by the observers in your classroom.

   a. The first column, CATEGORY, identifies the Indiana Interaction Index category. The I.I.I. contains seven categories:
      1. Asks question
      2. Calls on
      3. Answers question
      4. Raises hand
      5. Makes a statement
      6. Gives positive feedback
      7. No response.

   b. The second column, TEACHER, indicates how often the teacher was observed displaying these seven particular behaviors.

   c. The third column, TARGET #1, indicates how often this pupil was observed displaying these seven particular behaviors.

   d. The fourth column, TARGET #2, indicates how often this pupil was observed displaying these seven particular behaviors.

   e. The fifth column, OTHERS, indicates how often all other children in the classroom excluding target #1 and target #2 were observed displaying these seven particular behaviors.

8. PARTICIPATION INDEX - This heading indicates a percent ratio of the total teacher-pupil and pupil-pupil interactions occurring in the classroom.
    a. TARGET #1 - The TARGET #1 percent ratio is compiled by taking the total interactions occurring between the teacher and other pupils and the TARGET PUPIL #1, over the total teacher-pupil and pupil-pupil interactions elicited in the classroom.
    b. TARGET #2 - The TARGET #2 percent ratio is compiled by taking the total interactions between the teacher and other pupils and the TARGET PUPIL #2 over the grand total of interactions occurring between teacher-pupil and pupil-pupil.
9. OTHERS -The OTHERS percent ratio is compiled by taking the total interactions occurring between the teacher and other pupils over the grand total of interactions occurring between teacher-pupils, and pupils-pupils including TARGET #1 and TARGET #2.